

For want of a Green Paper . . .

The somewhat sterile debate about when a directive is, or is not, a directive, ultimatum or instruction (page 1) has lent the current phase of the Training for Jobs debate Alice-in-Wonderland overtones which are in danger of obscuring the issues beneath.

Depending on where you stand, the argument over the exact nature of the Employment Secretary's letter to the Manpower Services Commission last month could be an irrelevance impeding the swift, efficient and inevitable implementation of the MSC's takeover of a quarter of work-related non-advanced further education: the gravest constitutional crisis ever to face the MSC; or a useful delaying device that may allow time for the arrival of the cavalry—or at any rate save a few political faces. As is only to be expected, it is a bit of all three.

Any averagely-cynical student of government would interpret Mr Tom King's carefully-worded letter as an attempt to avoid the dictatorial odium of an explicit directive, coupled with a coded message to his own officials to present it as sufficiently close to that to cut short the cackle.

The thrusting Mr Geoffrey Holland, clearly anxious to get on with his job as director of the MSC, evidently did not fudge quite effectively enough. Not only did he give the Commission's local authority opponents a semantic opening to prolong the argument, but he seems to be at the receiving end of charges of manipulation from the constitutionalists among the Commissioners—

and other interested parties.

The most public standard-bearer amongst these parties has been Mr John Pearman, vice-chairman of the Association of Metropolitan Authorities' education committee, who opportunistically seized upon signs of official ambiguity to renew demands for a rethink of the whole take-over exercise, or at least a re-run of the Commission meeting which took the decision to go ahead in the light of the King letter.

So far as the AMA is concerned, any delay buys time, offers the chance to fight another day, and perhaps a face-saving excuse to bring back into line members like Walsall, (as we reported last week) the first to break the local authorities' united front and decide to parley with the enemy.

Not will a little procrastination be unappealing to the Association of County Councils, which remains officially lined up with the AMA in its refusal to cooperate in any way with the takeover, but has not had a great deal to say publicly of late on the issue. It may be that the county councils have already tacitly thrown in the towel, and there are certainly some—notably in the south-west—already on the brink of MSC negotiations.

But the ACC also numbers amongst its members some of the most implacable opponents to this breach of the principle of local authority education funding. It has to preserve a diplomatic balance between these opposing viewpoints, and

delays help preserve the front of opposition as long as feasible.

The constitutional handwaggon now looks like being kept rolling by Opposition spokesmen Giles Radice and Barry Sheerman, as well as by Bill Keys, leading TUC representative on the Commission, who persuaded the TUC General Council last week to spend rather more time on discussing the directive issue than it did on the miners. Leaving aside the obvious point that it must have been a good deal easier to achieve unity on NAFE than on Mr Scargill, if this does lead to a reappraisal of the TUC's membership of the Commission and cooperation on triling policies, it could indeed be a crossroads for the MSC.

This particular handwaggon was, however, launched by the arch-constitutionalist, Mr Wilson Longden, who does not allow his strong political support for the Government to stop him protesting his inalienable rights to independence and accountability as a Commissioner, and who still firmly intends to reopen the issue at the next meeting of the Commission at the end of the month (Profile, page 9).

Even if he succeeds, the realistic scenario from then on is that the instruction will turn out to be a directive, and that the MSC will then have the full legal go-ahead for implementation. Given the deductions from the RSG already signalled, i.e. a.s. are now getting closer to the deadline when they will either have to negotiate with the MSC or

replace that funding, or sacrifice their own young people depend on.

The last ditch must come in February most budget meetings take place, but backwards from there in the budgetary cycle of MSC meetings, there will be a matter of weeks for proper consultation of the local authority associations after a directive on October 24, and that would be followed by an equally brief period of talks with individual i.e.s and colleges.

It is hardly surprising that the MSC (i.e. a.s. and colleges) are keen to press this stage now and that the unionised, ragged by the day. There can be few now who believe that the White Paper will be workable without full i.e.s. support, or that a Green Paper would not have been a far better way of tackling the necessary reform of curriculum and financing. But David Yates, not a Green Paper sort of man, he was by his successful shock tactics with the perhaps overlooked that the negotiator principle was less attractive a lure than arrangements.

Now, like all men in a hurry, he has to the next challenge, and his successor chairman is going to have to pick up messy pieces. It will be interesting to see a diplomat or a sledgehammer is judged an appropriate choice, or whether an agent will be deferred until the dust has settled.

COMMENT

No way to raise standards

The HMI curriculum discussion paper on English (page 5) represents the first major attempt to reconcile the old, enabling, grassroots style of curriculum development with the brave new world of national aims, objectives and criteria, imposed from the top down. And it has to be said that the result is a pretty fair mess.

The inspectors should not altogether be blamed for this. Their intentions are impeccable—to broaden the range and objectives of English teaching, raise standards, and reduce the great disparity between practice in different British schools.

The sections on aims and principles of English teaching, once again, and rightly, stress the Bullock Report's messages about how language competence develops, and how teachers can promote it—not by giving children isolated practice exercises in different skills, but by starting with what students want to say or write, and helping them do it better and more effectively.

One can well understand the Inspector's exasperation when they visit school after school, and find that the Bullock messages, including the vital messages about the importance of oral work, group work and discussion, have not got through to English departments, in spite of a spate of reports and discussion papers trying to disseminate them. And one should not underestimate the pressure inspectors are under to take a tougher stance.

But the new document cannot be judged by its intentions, or by the pressures which have inspired it. The important question is whether it will lead to higher standards, and to more of the broad and effective style of English teaching the inspectors have been promoting over recent years.

Here, inexorably, one comes to the section on detailed objectives—33 of them for seven-year-olds, 56 for 11-year-olds, and 59 for 16-year-olds.

They are what is new in the document and what parents, governors, politicians, newspaper editors and even teachers will focus on—however much the Inspectorate pleads for the paper to be read as a whole.

They are an astonishing mixture of the obvious, the trivial, the meaningless and the barney. Many are of no instrumental help at all: what is the point of prescribing that 7-year-olds "should maintain listening attention for a reasonable length of time when their interest is engaged"? Must we really set out to teach children that "word order determines meaning"?

It is not contradictory, but neither is it helpful to say that teaching grammar, spelling and punctuation in isolation from children's own speech, reading and writing has proved remarkably ineffective—and then say, in a way that will be taken as prescriptive even if it is not intended to be—that all 11-year-olds should know the rules of spelling, the difference between vowels and consonants, the functions and names of the main parts of speech and so on.

It is particularly unhelpful when the Inspectorate sees the broadening of the primary curriculum to include more history, drama, craft, science and so on as an urgent priority. Now, above all in primaries, they should be hammering the language across the curriculum message, not focussing people's attention on narrow aspects of competence or somewhat esoteric ideas about the use of "eye contact, facial expression, pause, tempo and intonation."

There is now enough experience (and disillusion) with this kind of objectives approach to curriculum development in the United States and Canada to say with some confidence that the detailed description of distinctive communication skills will lead to attempts to teach them directly, not "organically", as HMI inspectors would wish. It will have no visible effects on standards.

But it is, perhaps, useful that the objectives approach has now been set out in a way most teachers can see and assess. This is a discussion document, and should not simply be greeted with "gesture and movement in association with the voice", and then ignored.

What is needed is a cogent and constructive debate as to how the Inspectorate's very proper notions of a broad English curriculum and effective teaching methods can be disseminated to many more teachers and schools, and standards raised. There must be a way of doing it without getting hogged down in a sterile, self-defeating, Transatlantic-style obsession with detailed objectives.

Mr Lawson and jobs

The irony of Mr Nigel Lawson's latest ruminations on unemployment and how to reduce it will not be lost on young people. They have been told repeatedly in recent years that their unemployment is the result of the failure of the education system. Every one knows, of course, that this is nonsense, but scapegoats are always in demand, and the best people to blame for youth unemployment (after the young people themselves) are the teachers. Now Mr Lawson has found a new set of scapegoats. He has lighted upon another weak and vulnerable group—the lowest paid. They, it seems, are responsible for their own unemployment. Ministers love to tell people they have "priced themselves out of the market". The real area of potential growth for employment, Mr Lawson says, is in "no-tech" or "low-tech" jobs—the jobs with lowest skill content (once called unskilled, if you remember), which shape like Mr David Young have till now been constantly telling us are going to disappear.

It is all very perplexing. Here's Sir Keith Joseph beavering away to jack up basic education standards and give as many people as possible expectations of a higher order. And there's Mr Lawson demanding more jobs at the bottom of the heap, which make the smallest demands on talent or training. More to the point, there now seems every prospect of legal changes to put a floor under public law wages as are now paid.

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Somewhere along the line the rhetoric is getting snarled up. Of course, it is good to raise educational standards—not because education can guarantee anyone a job, but because education is really about self-fulfilment and extending the range of options, including job options. Of course, too, unemployment will be unnecessarily high—and society will find a lot of jobs are not being filled—if there are unrealistic assumptions about earning. Self-employed people who charge too much for their services go out of business, so why shouldn't the same principle apply to wage earners who generate less wealth than they expect to draw in pay?

But there is no dodging the paradox: you cannot give people more education, more autonomy, without also making them more choosy and less willing to put their pride (and their brains) in their pocket when offered one of Mr Lawson's bread-line jobs.

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Sir Keith v. Sir Alfred

Sir Keith Joseph, like the loyal departmental minister he is, has wasted no time in coming to the defence of his senior official, attacked last week by Sir Alfred Sherman, the former director of the Centre for Policy Studies.

His letter to Sir Alfred is categorically rejected as an attempt that they obstructed in their introduction of vouchers by Sir Keith and with it he forwarded a written parliamentary answer. He showed that he, Sir Keith, was intellectually convinced by the evidence that in practical measures was not a runner. As Sir Keith remarks were reported on the page of The TES, Sir Keith has copied to us and deserves to be noted.

This may not, however, be the end of the matter: Sir Alfred's imminent publication by the Inspectorate called The Inspectorate Office, where these accusations are repeated. Traditionally, opponents have to suffer in silence on their ministers to defend them—this might not apply to Mr Keith against nameless senior officials in a transparently defamatory and/or two exposed individuals.

Sir Keith is right to expect the attacks on his staff are a disgrace to him and his competence as Secretary of State. This week there are no attacks on the Inspectorate (page 1) of an independent attack on the Inspectorate. This is potentially extremely damaging and needs to be watched very closely. It is the duty of the HMI's independent referees or she will offend from time to time. But it is fundamentally important that an independent, just and fair should be maintained. Ministers, councillors and administrators should respect and defend it, even at the time to time, they come to the conclusions HMI may reach. Sir Keith says—links between spending and educational standards.

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Prospect of tax on books rouses wide opposition

Property believed to be worth £100 was stolen from Mrs Meltham CE School. Telephone cassette recorder, stereo, television and £20 cash. From the September 20, 1984, Huddersfield Examiner.

Hampshire drops 199 jobs to compensate for pay award

by Richard Garner

Hampshire—the home county of the leader of the Burnham management panel—has axed nearly 200 teaching posts as a result of this year's 5.1 per cent arbitration award.

The move comes at a time of increasing tension between teacher unions and local authorities—and as industrial action over this year's pay award continues in many areas.

The decision by Conservative-controlled Hampshire County Council, whose education committee chairman is Mr Philip Merridale, has provoked a bitter response from opposition parties and teachers.

Hampshire, which has a teaching force of 16,000, is to lose 165 teachers and 34 college lecturers.

The county budgeted for a 3 per cent pay rise for teachers this year. It left vacancies unfilled and refused to renew some of its fixed-term contracts during the summer pending the arbitration finding. As the award exceeds the figure budgeted for, the posts will remain unfilled, despite a warning from the county's education officer that class sizes will grow.

The 5,000-strong Hampshire branch of the National Union of Teachers has reacted to the announcement by summoning a special delegates' meeting next Monday—at which there will be a call for "no cover" action.

Dr Alan Leech, NUT county secretary, said there was an acute danger that the size of primary reception classes would increase.

Liberal/SDP Alliance members on the county council called for £1.2m to be taken out of the contingency reserve fund to fill the teaching posts. However, Mr Merridale said that some money reserve had already been used to help meet the pay award.

Meanwhile, it was also revealed this week that hundreds of teachers may not receive the back-pay from this year's award until Christmas. West

Glamorgan has told its teachers that staff shortages are to blame.

Mr Fred Smithies, general secretary of the National Association of Schoolmasters/Union of Women Teachers, warned that there would be an "appropriate response" from teachers if the back-pay was held up.

However, fears that a similar situation would occur in the Isle of Wight appear to have been allayed after the authority promised that it would try its utmost to ensure the payments were made this month.

Mr Peter Matthews, president of the NASUWT, said teachers in many parts of the country had still not returned the goodwill they withdrew during the summer—and were banning lunchtime supervision and boycotting parents' evenings.

In Bexley's Howbury Grange school, where the headteacher, Mr Ian Mitchell Lambert, provoked an NASUWT strike by deciding not to send children home during the dispute, a ban on out-of-hours activities is continuing.

In the Inner London Education Authority, where Labour leaders have launched a series of initiatives to improve the curriculum and combat sexism and racism, the London NASUWT executive has placed a complete ban on all management-directed meetings outside school hours until a deal on compensation, such as time-off-in-lieu, can be reached.

A statement from the executive added: "The central's teachers are now in no doubt that a proper break at lunchtime, spent out of school, is not merely less stressful, and more civilized and relaxing, but also provides an opportunity for them to charge their batteries for the afternoon session."

"The removal of unreasonable after-school burdens benefited not only teacher morale but also teacher performance in the classroom."



Will her choice of subjects cook her goose?

The EOC has upset home economics teachers with publicity material like that above. Hilary Wilce reports

Temper simmer over equality ad.

Home economics teachers are up in arms over an Equal Opportunities Commission advertisement which they claim denigrates their subject and falsely represents it as an easy option.

The advertisement carries the headline, "Will her choice of subjects cook her goose?", beneath a picture of a girl wearing a cook's apron and carrying a mixing bowl. It says that although there are many good jobs in science and engineering, too many girls still choose traditional "girls' subjects" at school.

"It may be an easy, comfortable choice. But it's liable to be cold comfort in the search for the more satisfying and rewarding job", the advertisement says.

Ms Maureen Greaves, home economics adviser for Enfield, who along with Ms Pat Melbush, home economics adviser for Haringey, has written to the EOC to complain, said it was wrong to promote one subject by denigrating another, "It is as much for equal oppor-

unities as anyone else, but you're not going to help girls by knocking traditional subjects", he said.

Ms Melbush said the implication was that there were no rewards to be had from studying home economics, which was quite wrong.

In their letter of complaint they also say that maths and sciences are rarely timetabled against home economics in schools.

The EOC, which admitted this week that many home economics teachers had complained about the advertisement, defended it as a thought-provoking part of its Women Into Science and Engineering campaign.

Ms Lynda Carr, head of education, also said that that two years ago, when the EOC had sent out suggested guidelines for good practice in home economics to all local authorities, not one response had been received from advisers and teachers.

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Appraisal schemes deadlock remains

Talks between teachers' leaders and the DES have failed to break the impasse over moves to introduce pilot teacher appraisal schemes in two local education authorities.

Mr Fred Smithies, general secretary of the National Association of Schoolmasters/Union of Women Teachers, whose union initiated Monday's meeting over the plans, said he could see no reason to lift the decision to boycott local talks in Birmingham and Suffolk.

Representatives of five teachers' organizations met Mr Ian Langtry, who is in charge of the teachers' branch at the DES, to discuss the initiative on Monday.

The National Union of Teachers, which was represented by Mr Doug McAvoy, deputy general secretary, and Mr Alan Evans, the head of its education department, said the issue would have to be discussed by its national executive—but in the meantime there could be no local agreement on such a scheme.

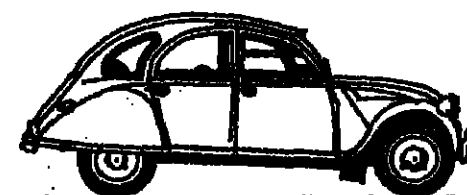
Mr David Hart, general secretary of the National Association of Head Teachers, said his members locally were prepared to enter into discussions without prior commitment. However, Mr Smithies said that if there was no agreement with the teachers' unions the initiatives could not get off the ground.

The union's worry is over a lack of consultation over the initiative—news of which was disclosed to them during August by the DES—and the fact that any local agreement could preempt discussions in the salary structure working party on teacher assessment.

The DES—while acknowledging that some of the issues to be discussed in Suffolk and Birmingham would be similar to those raised in the structure discussions—said there were differences.

In his letter announcing the initiative to the teachers' union, Mr Langtry spoke of hopes that they could be planned before next April—when they would become eligible for cash support under the education support grant programme for i.e.s.

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Discovering murals: A child at Shoreditch Play Park in London, during a conference on "Children, Planning and Play" for architects, planners, designers, artists and community associations.

It was held to discuss ways of improving children's play provision and of designing high quality play spaces, and while it was on children attended workshops on murals, wood carving, mosaics, concrete modelling and building with waste materials. One suggestion put forward was that every local authority should have a children's committee.

Shoreditch Play Park, financed by Hackney Borough Council, and run by the independent charity, Hackney Play Association, claims to be the first London park designed and planned by local people. It includes an amphitheatre, pond, wooden play building for under-fives, play yard with fixed equipment for older children, tree houses and has as its main feature a huge monster covered in tiles and made by local schools.

NUT seeks nurseries duty for l.e.a.s

by Richard Garner

Nursery education should be available from the age of three to all children whose parents want it, a policy booklet published by the National Union of Teachers states this week.

The booklet *Why Nursery Education?* highlights the differences in provision among the 104 local education authorities in England and Wales, ranging from 'Howloway', which provides nursery education for 65 per cent of its three and four-year-olds, to Gloucestershire with no provision at all. The booklet says the percentage receiving full-time nursery education had dropped from 4 per cent in 1980 to

3.7 per cent in 1983, while the number of part-time pupils had risen.

It adds: "The White Paper, *A Framework for Expansion*, in 1972 expressed the then government's view that steps should be taken to make nursery education available to all those children whose parents wanted it, from the age of three. This ambitious target, however, is still unmet, largely due to the expenditure cuts of recent years, though it remains the goal of union policy."

The booklet emphasizes research which indicates that before the age of five children go through their most

rapid period of development.

In particular, the early years are a time of great curiosity, when a child is trying to make sense of the world around him or her. A carefully planned and structured educational environment can build on and foster that curiosity, which forms the basis of the child's capacity for learning."

The booklet urges the Government to make it the statutory duty of all local education authorities to meet the educational needs of their under-fives by providing universal free nursery education for all children whose parents desire it.

American way to give the young a head start

by Virginia Makins

This week a group of 12 teachers and other pre-school practitioners started a course that will introduce them to a highly influential approach to nursery teaching, developed in the United States by the HighScope Foundation.

HighScope and its director, Dr David Weikart, are perhaps most famous for a longitudinal study of 123 black and socially and economically disadvantaged children in Ypsilanti, Michigan, which has provided hard evidence of the cost and social benefits of giving children high quality pre-school teaching.

The latest study found that at the age of 19, children who had been in the pre-school programme (which involved nursery schooling with a 1:5 teacher-pupil ratio, and one-and-a-half hours of home visiting every week) were more successful on a wide variety of measures than a carefully-matched control group with no nursery experience.

The pre-school children were far more likely than the control group to finish school, go on to further training and have jobs and be able to support themselves at the age of 19. (50 per cent of the pre-school group were employed, compared with 32 per cent of the others.)

And economists who worked out a detailed cost/benefit analysis of the nursery programme reckoned that for every \$1,000 (£800) invested in a year of pre-school education, society got back at least \$4,000, in terms of reduced costs for education and for dealing with delinquency, and increased life-time earnings for participants.

As well as researching the effects of the early 1960s programme, the HighScope Foundation has been developing what it calls "The Cognitively-Oriented Curriculum" for pre-school children. It believes it has evidence that its particular approach to nursery schooling works well in a wide variety of settings.

Tens of thousands of teachers in America have now been trained in its highly systematic methods. Recently, it has started courses for people who can go on to train others - and that is the course that the Voluntary Organizations' Liaison Council for Under-Fives (VOLCUF), backed by the Aga Khan and Gulbenkian Foundations, has just imported to Britain.

The 12 participants come from a wide range of statutory and voluntary agencies - with nursery teachers from Bristol and the Wirral, a representa-

tive from the Pre-school Play Association and another from the West Indian Women's Circle, as well as from the Ismaili community, and from Dr Barnados and National Children's Homes family centres.

The HighScope consultant, the course, Ms Ellen Frede-Lynn, is that the approach provides a framework with a lot of leeway, it is firmly based on the concepts - indeed, in the early stages of the curriculum set out directly for children concepts like the concept of number.

But gradually, working with teachers and children, the consultant began to modify their ideas, trying to teach concepts - "You see it, but why bother, when children acquire them anyway," says Ms Frede-Lynn - they concentrated on setting an environment where the concepts were most likely to develop.

"The result is a carefully planned method, based on a lot of accepted ideas such as that children learn from play and concrete experiences, but with much more systematic dynamic adult intervention than is found in many British nursery classes."

The method is best known as a system of Plan, Do, Review. In day has a Planning Time, when children, helped by teachers, plan their work. There is then a Work Time, when they do it, and a Review Time, when they discuss what they have done, and to give them a sense of achievement and self-esteem.

But according to Ms Frede-Lynn, the essential part of the method is that teachers are encouraged to work with children: "You get children to solve problems, think things through, express what they know in words, pictures and models, you work play alongside them rather than watching and being social. The idea is to extend their learning without interrupting their play and interest."

"You have to adapt to the children, a formal planning time may not be suitable for two-year-olds, or for very young children. So you do it in a way - but you still get them planning their work."

The British course will last 10 weeks with three three-week sessions, including a group practical classroom and a final week. The National Foundation has funded an independent evaluation of its results by Dr K. Smith and Mrs Teresa Smith of the University Department of Social and Administrative Studies.

Primary praise

Saxlingham voluntary controlled primary school near Norwich "provides some excellent examples of imaginative primary practice", HM Inspectors conclude in their report published this week.

Inspectors praised "the judicious use of textbooks to support learning rather than to initiate work, the thought given to extending, deepening and structuring the curriculum to enable children to meet key ideas and skills in many areas, and good record keeping."

The school has around 42 pupils and two full-time teachers and is housed in an 80-year-old building.

Youthful aid for playgroups

by Sarah Bayliss

The number of teenagers who help out in local playgroups as part of their school studies or "work experience" has increased dramatically over the past few years, according to a survey in Norfolk.

The survey, which was prompted by concerns about the contribution the more than four out of five playgroups received teenagers on placements from school, college, or Government training scheme. Most parents and playgroup organizers were "broadly positive" about the part teenagers played.

However, the survey by a study group in the Eastern Region of the Pre-school Playgroups Association, judged that roughly one-third of the placements were unsuitable because they were too short and superficial, involving no more than four visits.

"The growth of personal relationships, integration into the playgroup, and the understanding of young children will have hardly begun before

they leave. They need time to assimilate new ideas to feel part of the team." The study recommends that five visits (approximately half a term) should be the minimum agreed by teachers and playgroup leaders and that placements lasting a whole term are preferable.

The survey, entitled *Helpers, Students or Playmates? A Study of Teenagers in Playgroups*, found 894 young people in more than 100 playgroups in Norfolk and some outlying villages during the school year beginning September 1983.

Most teenagers were attending secondary school, aged 14 to 16, on courses that would lead to a CSE in child care. There was a "marked" preponderance of girls - out of 894 only 45 were boys.

But a case study of a village playgroup describes the successful placements of "David" and "Adrian". Both were very nervous, self-conscious and "very to begin with, but soon got

involved in children's play and considered their part of the team. Their teacher, "Mr. Morgan", is frequently and enthusiastically appreciated. He "seemed almost to be told that his pupils were genuinely helpful. They were working in playgroup than in school."

In most cases the arrangements had been initiated by the school or playgroup, but some arrangements were made by the teenagers themselves. One of the few complaints was that they did not have enough information about the playgroup and their course before they arrived; four playgroups claimed to have been given no advance warning of placements.

Helpers, Students or Playmates? A Study of Teenagers in Playgroups, 112 pp, for postage from PPA, 40 Garsington Road, Oxford OX4 2DQ, £1.50. Region, 1st Floor, 45 Garsington Road, Cambridge CB1 1LY.

Defiant 'poodle' bites back

The future of the Manpower Services Commission may be affected by the stand of its education services representative against the way the Government is pursuing its plans to take control of much of further education. Mark Jackson meets the dog that refuses to come to heel



controversial action. He agreed that the Government, as paymaster, can have the power and right to insist on getting its decisions carried out, but it must not expect the commissioners to agree meekly that they were the right decisions, because the commissioners were responsible to the groups they represented. If they lost the confidence of their constituents, they would no longer be able to deliver their cooperation and there would be little point in having the Commission at all.

Mr Longden's obdurate insistence on preserving what he saw as the proper relationship between two parts of the machinery of the state must still now have seemed merely rather tiresome to ministers. But he appears to be siding with the ministers' enemies in the present row over the handling by ministers and MSC officials of the Government's plan to give control of much of further education to those officials.

"I've shaken them out of their minds, Tebbit and the lot of them", the education service's commissioner says with some pride. "The lot" would not perhaps have been so shaken if they had looked a little more closely at the

man they were appointing. On the face of it Wilson Longden is a natural recruit to the new Conservative populists with their disregard of constitutional convention and old class loyalties. He is the product of a disciplined urban working class home in Chesterfield which subscribed to the Methodist virtues of hard work and self-improvement. He went from grammar school to national service as an RAF clerk and was persuaded by his commanding officer to go on to university. A degree in social administration was followed by one in education. Then, after a spell of teaching in North America, came jobs in colleges and a marriage into an upper middle class family bred in the traditions of colonial administration.

From his education professor, Wilson Longden had acquired a passionate interest - perhaps an obsession - with finding ways of reconciling the practical realities which affect educational provision with the moral purposes it involves. A philosophy teacher turned him into a practical disciple of John Stuart Mill.

"I'm a stickler for protocol because I see it as a safeguard against the arbitrary use of power. I'm against using power to crush opposition - whether it is in the education service or the GLC and the metropolitan authorities", he says. The other major influence in Mr Longden's adult life and the formation of his current attitudes has been his marriage, and its recent end.

Everyone assumed he shared his wife's views. Penny was chief whip on Bedfordshire Council "and she makes Margaret Thatcher look like a left-winger," he says. Nobody noticed that he was a very "wet" Conservative indeed because he took no part in politics. He didn't get the chance, he says, because he was at home looking after their two sons while she was attending meetings.

Now, after divorce, he has custody and care of the boys - the only single parent, he believes among the commissioners. "Even the trade union representatives don't fully understand what the YTS allowance means to a single parent family. If the only dependent child joins the scheme, the family loses not only child benefit but the single parent allowance which means that the YTS allowance is worth only £14 a week to them. It's that sort of human dimension that we tend to lose sight of."

Financial decisions must always be seen, he insists, in the light of their effect on human beings. "That's all that really matters, in the end." Mr Longden's son Harvey, aged 16 who wants to do a BTCE course and run a shop and Fraser, aged 13, are constantly giving him new insights into human relationships. "They've learned from their experience of their grandparents, how much more the working class cherish and care for people than do the middle classes," he says.

Responsibility for his sons has not stopped Mr Longden from becoming the most assiduously peripatetic of the commissioners. He sees it as his duty to travel around, keeping in touch with the Scottish further education interests as well as English and Welsh colleges; but looking after the interests of the Commission's own staff is also important and he regularly visits job

centres and other MSC establishments.

"With three million unemployed to cope with, they're doing a marvellous job - some of them work day and night and don't get much credit for it", he says. His visits are always fitted into a single day unless his sons are able to travel with him.

In between trips - which are taken on leave days and earned by doing a night call duty for his college - he has a rigid pattern of telephone consultation with the FE bodies. The day before a Commission meeting he phones NAT-FHE, the Association of College Principals, the Association of Colleges of Further and Higher Education, and then his own Association of Vice Principals. When a special issue arises he follows this with a much longer list, including the Further Education Unit, policy directors, and the vice chancellors.

He does not always agree with them but will nevertheless put their views to his fellow commissioners. On the present controversy over college funding, for instance, he has never hidden his longstanding belief that some reform of arrangements was needed.

What he says is that the White Paper should have been a Green consultative paper. He is convinced that, properly consulted, the local authorities would have agreed to change; without that agreement and the expertise of the authorities and the colleges, a mess is inevitable and it will take a lot longer to secure effective reform.

Mr Longden is well aware that there are difficult choices he has to make squarely alone, however much he tries to express the views of his constituency and whatever allies he makes in the process.

When he doesn't quite know what to do he goes home and plays some Chopin on his piano (he used to play a jazz trombone) reads Wordsworth, and then turns to J S Mill. He'd like to be the Education Secretary, but only if he could take the instant route into the Cabinet without having to endure the hassles of a parliamentary career.

Most of all he'd like to find a job in Chesterfield and take his children back to their solid working class roots.

CENTRAL BUREAU FOR EDUCATIONAL VISITS AND EXCHANGES

(FOR THE SCHOOL AND COLLEGE NOTICE BOARD)

OPPORTUNITIES ABROAD FOR PUPILS IN SCHOOL AND YOUNG PEOPLE IN GENERAL

Penfriends for school pupils aged between 10 and 18.

School and Class Links with educational establishments abroad.

Project Europe Travel Bursaries A limited number of bursaries are available to young people (aged 16-19 years) wishing to carry out a study project in a member state of the European Community. (Closing date for applications: 15th December 1984).

Home-to-Home Exchanges for pupils in secondary schools with France (from Scotland only), the Federal Republic of Germany (Bavaria - 3 weeks or whole term) and the USA.

Work Abroad (limited number of places only)

France (French speakers only - 18 to 30 years). Children's Holiday Centres - Summer 1985. (Closing date for applications: end February 1985).

Austria/Hungary/Poland/Turkey English Language Camps - Summer 1985. 16 to 20 years. (Closing date for applications: end April 1985).

Federal Republic of Germany (German speakers only - 18 to 22 years). Paid work experience - 6 or 4 months. (Closing dates for applications: 6 months) 12th November 1984; (4 months) 14th January 1985. France/FRG/Spain

Junior Language Assistant posts for young people intending to study languages in higher education - January to June 1986. (Closing dates for applications: mid June 1985 (France), and August 1985 (FRG), and September 1985 (Spain)).

The Central Bureau also administers the Language Assistant Scheme, the International Association for the Exchange of Students for Technical Experience (IAESTE), the European Community Second Programme of Young Worker Exchange, Further and Higher Education Links and opportunities abroad for those engaged in adult education.

OPPORTUNITIES ABROAD FOR TEACHERS, ADVISERS AND ADMINISTRATORS

Post-to-Post Teacher Exchanges are arranged with Austria, Belgium, Denmark, France, the Federal Republic of Germany, Italy, Spain, Switzerland, the United States and the USSR for six weeks, one term or one academic year. Closing dates for applications for the academic year 1985/86:

Europe 28th February 1985.
USA - 1 year exchange 1st Nov 1984.
USA - 1 term exchange 1st July 1985.

Short Courses Abroad are organised jointly by the DES and the Central Bureau for teachers of French, German, Italian and Spanish - La Rochelle 3rd to 16th April (inclusive) 1985. Montpellier Summer 1985.

Federal Republic of Germany Summer 1985.
United Kingdom (Anglo/French Reciprocal Course) Summer 1985.
(Closing date for applications: end January 1985).

Italy - Modena Easter 1986.
Spain - Madrid Easter 1986.
*The DES will organise a short course in Spain at Easter 1985 (applications to the DES).

Intensive Study Visit Bursaries available for visits to countries in Western Europe and North America.

Reciprocal Study Visits with countries in Western Europe and the USA. Spring term 1985.

Specialised Study Visits for headteachers and educational administrators to USA (20th March to 4th April 1985) and Canada (8th to 21st April 1985).

English Language Camps in Austria, Hungary, Poland and Turkey - Summer 1985 (Closing date for applications: end April 1985).

Hospitality Visits by German teachers to British schools: host schools and paying guests arrangements required (£35 per week) - 18th February to 8th March 1985 (Scotland); 4th to 22nd March 1985 (England and Wales).

Further details of all Central Bureau schemes (please specify) are obtainable from:

CENTRAL BUREAU FOR EDUCATIONAL VISITS & EXCHANGES
Seymour Mews House, Seymour Mews, London W1H 9PE.
Tel: 01-486 5101 (Enquiries from England & Wales).

CENTRAL BUREAU FOR EDUCATIONAL VISITS & EXCHANGES

16 Malone Road, Belfast BT9 5BN.
Tel: 0232 664418/9 (Enquiries from Northern Ireland).

CENTRAL BUREAU FOR EDUCATIONAL VISITS & EXCHANGES
3 Broomfield Crescent, Edinburgh EH10 4ED.
Tel: 031 447 8024 (Enquiries from Scotland).

(0054)

Exams shock for Brent as blame accusations fly

by Hilary Wilce

Poor O level results among black children in the London borough of Brent were variously blamed last week on "trendy teachers", "political activists", and "ridiculously low expectations".

In the political hotbed of Brent there were rare elements of agreement from Left and Right that the results were unacceptable, and that schools expected too little of their black pupils. Beyond that, however, there was predictable mud-slinging from both sides.

Brent Community Relations Council has surveyed 1983 O level results among pupils in the borough. This year's results have not yet been collated but Ms Janet-Rope Bogle, education officer of the local CRC, said there was little evidence of any improvement.

"Black children are failing in our schools, and failing extremely badly", she said. Schools tended not to put black pupils in for O levels, and to make them resit CSEs in the sixth form, which was "totally demotivating". There was also too much emphasis on social development, and not enough on academic achievements, she said.

At Aylestone High, for example, a predominantly black school, out of a fifth form of 153 pupils, there were only seven English and 15 maths O level passes last year.

"Yet the schools are doing nothing to change", Ms Bogle said. "They are just not receptive to the needs of the parents and the community. The whole multicultural policy in the borough is now more or less defunct. It is virtually in the bin."

However, Mr John Poole, president of the local branch of the National

Union of Teachers, attacked the survey as selective and biased.

He said: "They have just plucked out certain figures, put them down, and left people to draw their own conclusions."

Mr Poole pointed out that in one case the survey said that there were just six O level English and maths passes in a sixth-form of 107.

"But they didn't say how many of those pupils were actually entered for the exam, or how many had already passed them. They were just figures plucked from the air."

Mr Arthur Steel, Tory education chairman, conceded results were "not satisfactory". He blamed political interference by teacher activists, and "12 years of socialist administration which put more emphasis on social engineering than academic achievement". The Tories were trying to rectify matters by giving authority back to school heads, taking political pressures off education officers, and amalgamating secondary schools, he said.

The worst results were in schools which were predominantly black, he pointed out. "But if we go along with the idea that there is a whole race of people who are incapable of learning, then we are getting dangerously close to the idea of a master race. And that to me is entirely unacceptable."

Mr Harry Greenway, Tory MP for neighbouring Ealing North, agreed that "left-wing teachers" often patronized black pupils by not expecting high standards of work.

But Mr Martin Coleman, leader of Brent council's Labour group, blamed part of the problem on a lack of discipline in schools.



In casualty... youngsters demonstrate their first aid skills by putting Sir Keith's arm in a sling

St John presses for first aid in schools

by Susannah Kirkman

Sir Keith Joseph, the Education Secretary, has welcomed a new St John Ambulance scheme to train teachers and pupils in first aid.

First aid should be part of the education of every child, said Sir Keith, who was present at the inauguration of the project in London this week.

He told *The TES* that learning first aid would help children to mature more quickly and give them the confidence to cope with the adult world. There are four or five simple emergency skills which ought to be

taught in all schools, according to Mr Robert Balchin, the assistant director-general of St John Ambulance. Prompt first aid could save thousands of lives each year, as death or permanent damage occurred within five minutes of an accident happening, usually well before expert help could reach the scene.

St John Ambulance has published a first aid handbook for teachers and pupils which explains how to deal with injuries at school, ranging from accidents on the football field to the after-effects of glue-sniffing.

It is also preparing a three-day video training course for pupils which is presented by Lesley Ann, a 14-year-old pop programme, *The Take 5*. Children will receive certificates in budgees as they complete each day.

Emergency Aid in Schools, part 1: The St John Three Core Scheme, price approximately £1.50, available in December. Publisher: John Ambulance Supplies Department, Priory House, St John's, London EC1M 4DA. Tel. 01-250

Howard Sharron on a teaching system which is achieving remarkable results with the handicapped

Hungarians show new way for disabled

A special Hungarian system of teaching physically disabled children has so impressed a high-powered team of British psychologists that Birmingham City Council is to give it extensive practical trials.

What they discovered about conductive education, as it is called, surprised even the most cynical of the group which visited Hungary recently. Children with very severe conditions of spasticity, spina bifida, ataxia and athetosis, usually rendering them incapable of independent controlled movement, had achieved normal motor functions. They could walk and manipulate materials to the point where they were able to attend ordinary school classes with children of their own age.

The visit was made by Professor Ian Howarth, professor of psychology, Birmingham local education authority, Veronica Nanton, a regional welfare officer for the Parkinson's Disease Society, and Andrew Sutton, a Birmingham I.C.A. psychologist.

Conductive education was developed in post-war Hungary by Professor Adreas Peto. He used the psychology of Russian Marxists like Vygotsky and Luria, and the work of Pavlov, to construct a method of educating children and adults to overcome their handicaps, rather than just coping with them with the help of wheelchairs and gadgets.

The method has been practised in Britain on a limited basis for several years for children with cerebral palsy, at a special unit run by the Spastics Society. But the visit to Hungary established that the applications could be much wider.



English victims of spina bifida: methods developed in Hungary would offer them hope of a more active life.

The children are taught how to move naturally by the rigorous repetition of small movements which build up to complex skills. The conscious actions gradually become automatic reflexes and enable two-thirds of the pupils registered at the Peto Institute to attend ordinary Hungarian schools, where walking is a criterion of admission.

All aspects of the children's treatment are in the hands of highly skilled teachers called conductors. They are responsible for the child's emotional, educational and physical development, and so combine the roles of several distinct therapeutic professions in Britain. The conductor is therefore able to have an intimate knowledge of all aspects of the child's progress and can work out far more coherent individual treatment strategies than those given to children here.

Professor Howarth reported: "In terms of the application of known educational principles, the Peto Institute seems to be in advance of all remedial institutions in this country. The conductors base everything they do on a careful task analysis of all aspects of the child's educational needs. A global analysis guides the annual programme, but each day individual analyses are done to prepare for the next day's programme."

"The lessons are always meaningful and intelligible to the child. The children themselves are encouraged to use language to reflect and to lead what they are doing. And as far as possible they are given responsibility for their own progress."

"There is also very effective use of group work. The children set examples to each other, provide each other with approval when progress is made, and it makes repetitive practice more enjoyable as well as teaching the children to help each other."

Professor Howarth added that the institute's records showed that in any one year one third of its children recovered sufficiently to be slotted into the education system.

"Subjectively the institute also makes an extraordinarily good impression. It is a hive of happy activity with the children and conductors working very hard throughout the whole day."

The intensity of the conductive education regime in Hungary is considered to be one of the problems in

transferring the method to Britain. It is not thought likely that British parents would accept a residential programme of up to three years for their children. However, there are some day classes in Hungary and, through close exchanges of children and conductors with Budapest, it is hoped to match conditions as closely as possible, and to equal Hungarian results.

The educationists who reported to Birmingham council believe that conductive education "promises a major advance in the welfare of the physically disabled."

The Parkinson's Disease Society has offered financial support for the Birmingham trials.

The city's special education sub-committee has, with all-party support, agreed to second Dr Sutton to the project for six months on full salary. The Parkinson's Disease Society is similarly seconding Ms Nanton, and Birmingham University has agreed to act as unpaid host to the project.

Last year the university helped to organize a conference of eight Midlands state and voluntary schools which had tried to develop the programme on the minimal information about conductive education then available.

It was the report of the rigorously assessed conductive education classes that led a voluntary organization to provide the finance for the recent fact-finding mission to Hungary. Such is the excitement about conductive education now that several more disability groups are flying out to Hungary this month.

Heads criticize AS level plans

by Richard Garner

The Government's plans to introduce a new AS level examination alongside A levels are not acceptable, the Secondary Heads Association said this week.

In its official response to the Government's proposal the 4,100-strong SHA says: "We do not believe the AS level examination proposed, confined as it must inevitably be to a limited range of subjects and in some schools to as few as two courses, will make a significant contribution to the broadening of the A level curriculum."

"In most schools and colleges it will have the effect of weakening not only programmes of general studies, whether examined or not, but also a range of non-A level studies, (including AO studies in applied science, industrial-related courses and the

creative arts and the courses of the Institute of Linguists)."

The association also doubts that AS is capable of being implemented in the way that the Government's paper suggests.

"Joint teaching with existing A level sets is unlikely to be successful: not all syllabuses are divisible into separate but related halves and AS students on one half of an A level course are bound to be disadvantaged against those who are following both halves."

"The response goes on to warn that smaller schools and colleges will not be able to offer the range of courses that the Government envisages because they will not have enough staff - especially maths, physics and technology teachers."

Decentralization seen as key to UNESCO survival

Decentralization could be one of the keys to UNESCO's salvation, Professor Malcolm Skilbeck, chairman of the World Education Fellowship, suggested last week.

In a speech in London on Tuesday, he said the Paris-based organization must begin "a serious rethink of its role and functions". The United States announced last year its intention to withdraw from UNESCO because of its political stance and "unrestrained budgetary expansion."

The UK has also voiced criticisms and could follow suit, but many people would warmly welcome a lead from Britain in UNESCO's reform and renewal, Professor Skilbeck told the UK United Nations Association.

He stressed especially the value to be gained from decentralizing from Paris, where its headquarters has often been accused of bloated bureaucracy. "A relatively small and efficient secretariat in Paris could be the nucleus of a worldwide network including powerful regional centres", he said.

A new organization aimed at raising the profile of art and design teaching was launched this week: The National Society for Education in Art and Design will act as a trade union for teachers in these subjects from all sectors of education and as a professional association.

The society is the result of a merger between the National Society for Art Education and the Society for Education through Art. It will soon publish guidelines for primary school art and design and a directory of careers available in art and design.

UGC taken to task on engineering allocation

The University Grants Committee has been accused by the Engineering Council of not facing up to the need to earmark funds for accredited engineering courses.

The council's director-general, Dr Kenneth Miller, advocated a 10 per cent national switch from arts-based to science-based student places, with the majority of the extra science-based places going to engineering students.

Without earmarked funds, facilities for engineering courses at university would deteriorate and the intake of bright students would drop, he said. A switch of 10 per cent would provide another 4,000 places, which would require an extra £100m a year.

At present, the Government decides the figure to be spent on university education; the UGC decides how it will be divided among the universities, which in turn decide how they will spend it between the various disciplines.

Dr Miller said he was pleased that the UGC recently accepted the case for a further shift towards science and engineering in line with the wishes of the Education Secretary.

'No place' for husband and wife teams on governing bodies

by Richard Garner

Husbands and wives should not serve together as parent representatives on school governing bodies, a teachers' union has told the government.

The 90,000-strong Assistant Masters and Mistresses Association, in its response to the government's Green Paper *Parental Influence at School*, warned of the danger of giving parents too much power on governing bodies.

It gives its support for the principles inherent in the Taylor report into governing schools that there should be equal representation from parents, teachers, local authority representatives and the community.

It adds: "Local education authorities must be encouraged... to ensure the widest possible spread of interest amongst parent governors. It must be undesirable to have, for example, both a husband and a wife as governors or both parent governors having children confined to the same year group within the school."

The union's response warns of the danger of parent governors - which the Green Paper would like to be in the majority - approaching meetings from a political stance.

"The association has noted recently an increasing tendency for local authority appointees to governing bodies to adopt rigid political stances and to approach meetings in a political way," it adds. "This trend it deprecates absolutely."

"There must be a real possibility that the parents who will seek to serve on governing bodies will be those who are politically active and will thus have the opportunity of furthering their aims in a different guise. The possibility of this influence being removed can only be brought about by ensuring that no group has an overall majority."

The response goes on: "It must be obvious that the parental membership proposed is too high and should be reduced."

AMMA also claims that the Green Paper gives too little weight to the worth of professional opinion on governing bodies, concluding: "It is with regret the association has to say that the role and responsibilities of the professional teachers and is in serious danger of undermining the authority of the headteacher."

Ulster I.e.a. acts on sex equality

One of Northern Ireland's five local education authorities has told all its schools to make sure they are offering equal opportunities to girls and boys, Hilary Wilce writes.

The Western Education and Library Board, which says it wants to ensure that there are no breaches of the Sex Discrimination (Northern Ireland) Order 1976 in its schools and colleges, is urging that the spirit as well as the letter of the law be obeyed.

Its guidelines say that curriculum, resources and facilities of every institution should be equally accessible to boys and girls, and that there should be genuine opportunities for pupils to follow non-traditional subjects.

The early stages of secondary schooling should ensure a wide future range of subjects for all pupils, and

option choices must not be based on the grounds of sex.

Schools should also have a wide range of equal opportunities policy, the guidelines say, and parents should be aware of this.

The board also intends to draw attention to two particular areas: the failure of two thirds of primary schools in the province to make provision for boys and girls, and the encouragement of girls into science-based subjects.

The initiative was welcomed by Ms Eileen Collins, senior education officer for Equal Opportunities Commission Northern Ireland, who said the board would also monitor the guidelines were being put into practice.

Clothes grant up

North Tyneside local education authority is to increase school clothing grants from £25 to £40, an increase of 60 per cent. The grant is also to be extended to children in nursery schools and classes. All pupils entitled to free school meals qualify for the grant.

New back-up for women

Both girls and women teachers are likely to benefit from a new back-up scheme set up by the Industrial Society. The group, called the Peppercorn Group, is headed by Elizabeth Peppercorn, who is a member of the society and a member of the School Curriculum Development Committee.

Ms Cleverdon said that the group would take over responsibility for the society's existing programme of day conferences for sixth-form teachers in management. Twenty such courses would be mounted each year. Courses were also being held for school governors.

School prayers row prompts Asian boycott

A row over school prayers in Derby has caused Asian parents to withdraw their children from a number of schools in the city.

Children at St James Church of England Infants were told they would get a place at the St James Junior if their parents signed a form which included the wording: "My religion

is... but I will be willing for my child to go into school religious assembly and take part in school activities."

Although some Asian parents signed the form, 13 who did not were refused places for their children.

An Asian leader complained: "This is pure racial discrimination," and gave warning that the dispute could spread

to other schools if no action was taken. In a statement, Mr Frank Revell, chairman of Derbyshire Education Committee, said that because "the church school had voluntary status, all admissions were dealt with by the governors."

The Derby Diocesan authorities have called a meeting of their appeals panel to adjudicate between the governors and the parents, Mr Revell added. Last year some Asian parents in Derby sent their daughters to school wearing traditional blouses and trousers. Derbyshire Education Committee later ruled that parents should be given the last word in deciding whether school uniforms should be worn.



Striking father bringing home the coal

The coalminers daughters

Easington is a small single-industry mining town situated 20 miles south of Newcastle upon Tyne. After six months on strike, morale is high, but the burdens on family life are mounting. In the face of winter, anxiety about food, money, health and heating is growing. These pictures show how Easington's children are coping with a new way of life.

Photographs by Laurie Sparham



Father collects child from school



Home for tea



Time for grandchild



Children play in the grounds of a school in Easington



Clearing the way: community service has taken various forms, now young volunteers in schools is suggested.

Unions angry at youth volunteers idea for schools

Hilary Wilce reports on the revived debate about a national community service scheme

Teacher unions reacted angrily this week to suggestions that hundreds of thousands of young volunteers could be drafted to help in schools.

In research published this week Professor David Marsland, professor of sociology at Brunel University, outlines how 300,000 full-time youth volunteers could be drafted immediately into education, health and the social services.

However, Mr Nigel de Gruy, deputy general secretary of the National Association of Schoolmasters/Union of Women Teachers, said the scheme was a false cure for unemployment. "And it indicates just how people underestimate the difficulties of supervising children."

A spokesman for the National Union of Teachers said: "I can think of virtually nothing that volunteers could do that would not be taking a job away from a paid worker, whether a teacher, a technician, or a manual worker... I suppose they could pick up litter in the playground, but then that is really the job of the school caretaker."

But Professor Marsland said he had talked to many teachers and had met "no thoroughgoing resistance" to the idea of volunteer helpers.

"I think, for many, it is a question of ideas competing in their heads - that is, they are sympathetic to the plight of unemployed young people, but they are also strong trade unionists."

Most acknowledged there were needs going unmet in schools, he said, and to say that there was nothing volunteers could do was "ludicrous and unrealistic."

Professor Marsland's work was published along with the findings of an opinion poll which showed that 84 per cent of those between 15 and 24 who were interviewed want the Government to introduce a national community scheme for young people.

But the poll of almost 1,900 people, conducted by Market and Opinion Research International for *The Times*, showed that only 28 per cent of young people thought such a scheme should be compulsory, and that financial rewards being equal, the overwhelming majority of 16 to 18-year-olds would prefer either to start a job (42 per cent) or stay on in education (40 per cent).

Nine per cent said they would like to join the Armed Forces, more than twice as many (4 per cent) who said they would opt to take part in community service.

Two detailed case studies are included in the report. In one, a primary and nursery school of 150 pupils in a

commissioned by Youth Call, a body which has long been pressing for a national voluntary community service scheme.

The findings have reopened debate on crucial aspects of any such scheme, including whether it should include a military option. Many questioned in the poll felt a military dimension to the scheme that would put off the three-quarters of young people who reject the idea of conscription.

The problem of incentives has also been raised again, with the most appealing to young people being a certificate of achievement, followed by a bonus payment for completing the scheme.

Youth groups which reject the proposals say they are a way of using cheap labour, weakening the trade unions, and depriving young people of proper training.

But Professor Marsland maintains that his detailed proposals for where volunteers might be placed avoid any hint of job substitution.

After looking closely at the education service in Hounslow, Hertfordshire and Leeds, and translating his estimates onto a national basis, he suggests that 175,500 volunteer placements could be found in schools, colleges and the youth service immediately.

Among the tasks suggested for volunteers are organizing outings and leisure activities, assembling special school materials, clerical and secretarial assistance, helping pupils with reading and number work, mending furniture, developing sports, helping with youth workers' research, working on school grounds, helping out in labs and libraries, and working on lunch and evening activities.

Two detailed case studies are included in the report. In one, a primary and nursery school of 150 pupils in a

touch inner city area, three girls were already working on work experience placements, doing mainly clerical, secretarial and administrative work.

"Despite the headteacher's fundamental scepticism about any merely 'palliative' approach to youth unemployment it does not prevent her showing real enthusiasm about the idea of help with the work of the school through community service," the report notes.

Discussion with teachers suggests there is work for at least five full-time volunteers. "They would help in the nursery and reception class, as teacher assistants with infants, in the library, in the office helping staff with lists, registers, duplicating, copying and so on."

Five placements in a school with 150 pupils makes 150,000 placements on a national basis, the report points out.

In a second school, a purpose-built community school on a campus containing other public facilities such as a sports hall, clinic and swimming pool, the report spots scope for helping with physically handicapped pupils, helping technicians with audio visual aids, working in the library and office, and for portering, security and reception work. Volunteers could also help run "Mums' groups", now serviced by staff.

"The school has some 700 pupils, with a staff of 45. By the time I had finished talking with staff and looking round we had practically set up a scheme involving 20 young people on community service," Professor Marsland writes.

He maintains that there are four particular advantages to having young people work in schools: they learn to communicate with pupils, they are involved in an area where their own experience makes them "natural experts", they can offer practical skills in areas like sport and music, and young men can provide alternative role models in largely female-run primary schools.

But findings from the MORI poll show that far more girls than boys are interested in volunteering for "teaching young children" as a community service option. Only 14 per cent of young men said they would prefer this work to other alternatives, against 49 per cent of young women.

Work to be done, Professor David Marsland, 52 from Youth Call, c/o Social Services Department, Springfield, Maidstone, Kent.

Green light for industrial studies centre

by Diane Spencer

King's School in Grantham has been given the go-ahead by the Department of Trade and Industry and Lincolnshire education authority to set up a centre for industrial studies.

The centre, thought to be the first of its kind, will be staffed by an industrialist and a teacher, said Mr Derek Lee, head of King's.

The industrialist will, he hopes: ● Identify gaps in the school curriculum and make it more relevant to the needs of industry; and ● Help sixth-formers to set up and run a company so they can get practical experience and establish a resources centre.

The local authority has donated a house in the middle of Grantham for the centre and will fund 25 per cent of the cost of £86,000 over two years. The DTI has given 50 per cent and Mr Lee is confident that the rest will be raised from local industry and research organizations.

This idea grew out of his staff's involvement in the CBI's Teachers in Industry scheme. "But it was always one-way traffic - industrialists never came to work in school", Mr Lee said.

So he approached the DTI with the idea and got a "warm and sympathetic response". The scheme should get underway next April with staff appointed by next September.

The centre will be used by other schools in the area, and by local firms for meetings and for displays and exhibitions. Although it will operate as a pilot project Mr Lee hopes it will carry on beyond the planned two years.

"We don't intend to turn out a lot of Arnold Weinstocks, but it should make our pupils much more aware of the place of industry in the community."

Like a lot of other schools, King's has at least a dozen liaison schemes with local firms for work experience so the centre would tie them all together and make more of an impact on the ethos of the school, he said.

So far he has not decided whether to appoint one person, who would have "broad management experience" for two years or to have a different one every six months.

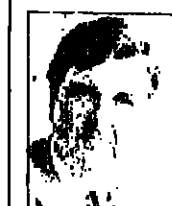
Training plan 'not for election'

The Joint Labour Party-TUC plan for training is not a policy for the next election, Mr Harry Sheerman, the shadow training minister, said this week.

"If I thought it was I would be pretty dismayed" he told a Socialist Educational Association fringe meeting at the party's annual conference at Blackpool on Monday.

The joint statement was a compromise which the Labour education front bench regarded as a stepping stone in hammering out radical new policies which will not necessarily be enmeshed with the MSC as at present constituted - or with the MSC, full stop.

Careers Diary



by Brian Heap

Neat and tidy clearing systems have many advantages for universities and colleges, but they also have their limitations and dangers. This is particularly the case of physiotherapy courses, as in many instances the first choice is the only real choice for applicants. Such is the competition for places, I have never heard of any applicants being made offers by their second and third choice colleges.

The Universities Central Council on Admissions system also creates some problems for applicants. This week one of my former sixth-form girls, a committed biological scientist, received an offer of a university place at Brunel to study Design and Technology - a course requiring a sensitivity for art and design and an interest in teaching! Fortunately, she is not determined to go to university at all costs and rejected the offer.

I am not suggesting that there is only one career or group of careers for



Physiotherapy training

every school-leaver, but the irrationality of this kind of offer can obviously prove highly detrimental to a student in the long term.

Plans for the Polytechnic Clearing Admissions System are now well into the pipeline and the application form at present looks very similar to the UCCA form. From September next year students applying for places at polytechnics in 1985 could choose from four degree or DipHE courses and have a choice of two other courses, for example, the Higher National Diploma.

This year, however, poly applicants can still apply for a range of courses, deferring a final career decision until next August. For university applicants such flexibility is limited but still worth considering. For science courses a choice of options at the start is available in the Welsh and Scottish universities and at Aston, East Anglia, Essex, Lancaster, Keele, Nottingham, Reading, Southampton and Sussex. For social sciences this is possible at Scottish and Welsh universities, Birmingham, Bradford, East Anglia, Exeter, Manchester and Salford.

Because teachers know more about educational visits than anybody else



The Specialists in school travel to France
140 High Street
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Pulling the jobless out of 'car parks'

FRANCE

Mary Follain on how the new Prime Minister is tackling youth unemployment

Three weeks after his promise on television that by 1985 all school-leavers under 21 would at least be offered some job training, the Prime Minister M. Laurent Fabius, has announced details of new training plans for young people at a total cost of up to three billion francs (£250m).

Paris hopes to place an extra 300,000 young unemployed between the ages of 16 and 25 on the 20 or more different types of on-the-job courses already in existence, despite often-voiced criticism that these are often parking spaces (car-parks) for the unemployed, and hopelessly ill-suited to industry's needs.

M. Fabius hopes to entice others into community jobs on a large scale - up to 75,000, he says - following Sweden which has significantly reduced its numbers of unemployed, an example France desperately needs to emulate.

The new plan coincides with a forecast from the Paris-based Organisation of Economic Cooperation and Development that whereas 12 other countries (including Britain) will see an improvement in youth unemployment figures, France alone will face an increase. Nearly 25 per cent of her youth labour force is unemployed and this is expected to rise to 28.5 per cent in 1985.

Unemployment will certainly be a crucial factor in the parliamentary elections of 1986 and the already declining popularity of the Socialist government is unlikely to weather any increase. Previous attempts to solve the problem by state intervention have produced few results and even the kindest of critics accuse the government of well-meaning bungling.

M. Fabius has appealed for a combined effort from all concerned and warned against expecting too much from the state. An agreement signed last October between the employers' association and the trade unions assured him of their cooperation in the youth training programme, which is financed by industry and should provide for up to 300,000 extra places for 16 to 25 year olds.

The state will finance places for a further 100,000 18-20 year olds giving them three months' work experience. It will also provide 100,000 others between 18 and 26 with "work-training contracts" which mean they are employed full-time for the duration of the course.

In all, this adds up to a total of 500,000 extra places, in addition to more than 400,000 already announced last June. If everything goes to plan this will mean nearly 900,000 fewer unemployed over the next two years.

In addition, the education ministry will give 60,000 school leavers and students the chance of an extra year of study within the education system, and 20,000 apprentices will be offered an extra third year at the end of their two-year apprenticeships. The Technical Institutes (roughly equivalent of polytechnics) have been asked to take

in an extra 3,000 students, and engineering schools an additional 1,000. The only new element in this new round in the fight against youth unemployment is the plan to offer young people low-paid community and environmental work for 20 hours a week. This is not aimed at the underprivileged or the maladjusted but will, it is hoped, take hundreds of thousands of all kinds of young people off the dole for six months to a year. Some could be sent to work in underdeveloped countries.

This initiative has been given a very mixed welcome. Professor Bertrand Schwartz of Dauphine University, an adviser to the Prime Minister on the youth opportunities programme, says that the success of the new scheme will depend on adult reaction. "If adults are scornful when they see young people clearing scrub or shovelling the old and take the negative attitude that it's only right, the lazy, young layabouts should be given something useful to do, then the youngsters won't want to take part."

He believes it will be beneficial for young people to have the choice between a course and a community job. "There are times when they need to get out and do something." He would like to see better coordination of the various bodies involved in training schemes and increased decentralisation.

Reaction from the trade unions and employers has been lukewarm. They complain that the Socialists' anti-unemployment programme does nothing to create new jobs or stimulate the economy, nor does it attempt to improve the content of training schemes.

All-night talks avert strike

ISRAEL

The threat of a national teachers' strike has been averted by an all-night session between officials of the teachers' union and representatives of the education and finance ministries.

The principal bone of contention was the teachers' demand for an 8 per cent "parity bonus" to bring their salaries in line with those of engineers. The Government maintains this is impossible in view of the severe economic crisis confronting the nation.

The worsening economic situation, which has already led to a 3 per cent

cutback in teaching hours compared to last year, could lead to the firing of 1,000 teachers if the finance ministry does not waive its demand for further cutbacks, according to Mr Eliezer Shammuel, director-general of the education ministry.

The cancellation of a highly successful tutoring programme involving 12,000 university students working with children with learning difficulties in underprivileged neighbourhoods, by the Education Ministry, had to be revoked after widespread protests.

Mr Zevulun Hammer, education minister of the outgoing government, is expected to be succeeded in a

national unity government by former president, Mr Yitzhak Navon of the Labour Party, one of the most popular figures in the country.

Mr Hammer, an orthodox Jew who is a member of the National Religious Party, denied at a press conference recently that Jewish studies had been emphasized in the school system under his regime at the expense of other subjects. He said he had initially placed special emphasis on Jewish studies because of severe shortcomings in this area in some schools.

Steven Plaut



The Church of St Paulus, in Floriana, where the archbishop's curia has been desecrated in Malta's dispute over private education.

Church schools stay shut in face of Labour mob threat

by a Special Correspondent

MALTA

A last-minute decision by the Archbishop of Malta, Mgr Joseph Mercieca, and the Bishop of the nearby island of Gozo, Mgr Nikoll Cauchi, not to open all 72 church schools this week has possibly averted serious incidents near the schools, but the Church-State dispute over the future running of private schools on the islands is far from over.

The Labour Party threatened to send its army of "soldiers of steel" to the schools to augment security forces which would have been sent there to prevent schools from breaking the law - which they would have done had they opened in defiance of Government forces on Monday.

Twenty thousand boys and girls attend kindergarten, primary and secondary private schools, the majority of which are owned by the church. They represent a third of Malta's pupil population.

The bishops' decision is thought to have been largely influenced by attacks by a mob of lorry-borne dockyard workers who on Friday desecrated chapels and wrecked offices at the archbishop's curia in Floriana, about a mile from Valletta, the capital, and also caused damage to the law courts in Valletta itself.

The most that could be hoped from the law and very definite easing of the high tensions of the past few weeks, is that a way may be found for fresh talks between the two sides. However, neither side appears willing to back out from its already stated position.

The police are maintaining a round-the-clock guard on all church schools

and no one except the priests and nuns who run them is allowed into the buildings.

The Labour Party, while calling for "volunteers" to return to work, said it will call them out again should the need arise.

Meanwhile, many parents of children who attend private schools are breaking the law by keeping their children at home.

Although the Government has opened four new schools to accommodate pupils from eight Church schools whose licenses it has revoked, since then continues to be low. Now pupils are said to have enrolled in the schools opened on September 1 but of 1,616 girls who previously attended schools run by nuns, only 10 were at school on Monday.

To make matters worse, a state school teachers' union has been extended, and schools are being run by a skeleton staff of teachers supported by parents.

The Church-State clash has arisen from a Government decision that all schools should provide free tuition which it claims is a socialist principle from which it will not move.

Dr Carmelo Mifsud Bonnici, Education Minister and promoter of the 68-year-old Prime Minister, Mr Don Mintoff, set the schools a set of conditions, principal among which was that they should not charge fees.

These were rejected, with the Church saying it could not afford to, and, as a result, the Government said they would not be allowed to reopen on October 1.

Discipline 'worse since cane ban'

IRISH REPUBLIC

John Walshe on teachers' views of abolishing corporal punishment

Over a third of Irish primary teachers feel that school discipline has suffered since the official banning of corporal punishment in February 1982.

This is among the findings in a survey of teachers conducted by the Dublin West branch of the Irish National Teachers' Organization. A total of 364 teachers took part in the poll.

Teachers rated lack of discipline in pupils' homes, lack of parental support and lack of parental involvement in matters of discipline as the three most important reasons for indiscipline in schools.

A fifth of the respondents felt their teaching effectiveness had suffered since the abolition of corporal punishment, while 40 per cent agreed that discipline in their schools had suffered. Thirty per cent of teachers were spending six to ten minutes per hour dealing with discipline problems and 15 per cent were spending 11 to 15

minutes per hour.

Fifty-eight per cent of teachers expressed satisfaction with their school discipline policy as opposed to 24 per cent who were dissatisfied.

Ninety-four per cent of teachers viewed parental involvement in education as important, especially when discipline problems arose.

Seventy-eight per cent of teachers felt that parents should be held responsible for the behaviour of their children in school. This raises the possible viewpoint that teachers see a certain diminution of their long accepted position that they stand "in loco parentis" while educating.

A surprising result was that 47 per cent of teachers agreed that disruptive pupils whose parents cannot or would not assume responsibility for their behaviour in school should not continue to be catered for within the school system.

The vast majority of teachers disagreed with the abrupt manner in which the ministerial order prohibiting corporal punishment was introduced - they felt that teachers and their organizations should have been consulted before the decision was taken.

Ninety-five per cent of teachers surveyed wanted the Education Ministry to lay down legally based guidelines

and strategies to deal with serious and gross pupil behaviour.

When he banned corporal punishment the then minister, Mr John Boland, said he hoped individual schools would work out their own approaches to dealing with discipline matters - but this did not happen and instead temporary guidelines were agreed between managers and teachers.

A committee was set up by one of Mr Boland's successors, and this is expected to report shortly. A leaked draft of the committee's deliberations showed that it is considering the introduction of soccer-style yellow and red cards for misbehaviour.

It envisages that a yellow card would be sent to parents or guardians if a pupil's behaviour was such that it was necessary to seek their cooperation in dealing with problems such as absenteeism, vandalism, or lack of punctuality.

If the problems persisted, a red card would be delivered personally or by registered post requesting an interview with parent or guardian. This would mainly be for persistent misbehaviour or serious breach of discipline.

Suspension of pupils would be considered for a single instance of serious misbehaviour or repeated instances

Gay teachers face sack in state crackdown

AUSTRALIA

Luis Garcia on why Queensland is taking a tough line

The Conservative government in the northern Australian state of Queensland is to sack teachers who publicly declare they are homosexual.

Mr Lin Powell, the state's minister for education, introduced the tough measure following at least two recent court cases involving teachers convicted of sexually abusing their students. In both cases the courts criticized the Queensland education department, teachers and parents for failing to act when complaints of sexual abuse were made by the students.

A few weeks ago, the Queensland Court of Criminal Appeal increased the sentence of a former school headmaster from six months to three years in jail, after the man had pleaded guilty to nine counts of having indecently assaulted boys under 14. And in the city of Townsville late last year a teacher was convicted on four charges of having indecently assaulted schoolgirls and five counts of exposure.

At the time the judge said that the matter was complicated by the fact that the education department had received complaints about the teacher's activities over a number of years dating back to 1959, but had ignored these complaints.

These two cases in particular have caused an uproar in a state which is generally regarded as Australia's most conservative, and where fundamentalist religious groups have considerable influence.

Mr Powell said that strong action would be taken immediately to investigate complaints about teachers who physically or sexually abused students. "Anything that dilutes the public view of what a teacher should be, will not be tolerated," he said. "The welfare of

the students in our school system will be our prime consideration."

Mr Powell has a history of action against homosexual teachers. A few weeks ago he was instrumental in having organizers of a homosexual festival at the University of Queensland withdraw a panel discussion on paedophilia from the conference agenda.

Mr Powell's announcement has come under attack from political opponents and from gay groups in Queensland and from other states, where the regulations regarding homosexual teachers are relatively liberal.

In New South Wales and Victoria the official line is that teachers are not employed on the basis of race, skin colour, religion or sexual preference, and that no action is taken to investigate a teacher's behaviour in school. But according to the Sydney-based homosexual lobby group, the Gay Teachers and Students Association, harassment and discrimination against homosexual teachers in public schools is not uncommon despite the recent introduction of anti-discrimination legislation which makes it an offence to discriminate on the grounds of sexual preference.

The association claims that a great many homosexual teachers are scared to "come out" because of the backlash they can expect from their school colleagues and students.

SAT barometer points to change for the better

UNITED STATES

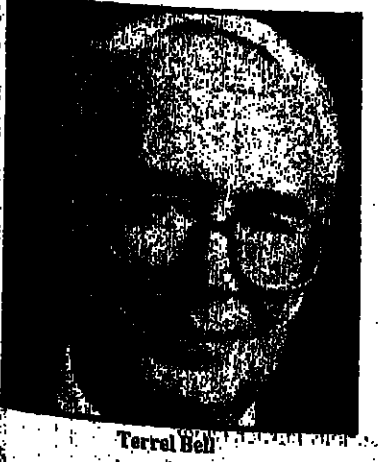
Peter David reports on a long-awaited improvement in school-leavers' aptitude scores.

College-bound school-leavers have notched up the biggest annual improvement in scores on the national Scholastic Aptitude Test (SAT) since the scores began a precipitous decline in 1963.

The College Board, which administers the test to nearly a million high school students, announced last week that in 1984 SAT scores jumped one point in the verbal section and three points in the mathematics section for a total increase of four points. Mr Terrell Bell, the Education Secretary, hailed the scores as an encouraging sign of academic recovery.

SAT tests are taken voluntarily by American secondary school students who hope to enter higher education. Although originally designed to help colleges select applicants, they have become a barometer of school performance. When the scores began to decline in the 1960s, they triggered a national debate on the poor quality of secondary education.

Despite signs of recovery the College Board warned against complacency about standards. Mr George Handford, board president, said the in-



Terrell Bell

creases were small compared with the many years of decline.

This year, the national verbal average rose to 426 from 425, while the mathematics average increased to 471 from 468. In 1983, the verbal average fell by one point to 425, although the maths score rose a point to 468. In 1982 there were small rises in both maths and verbal scores whereas there were no improvements in 1981, when SAT scores hit their all-time low.

According to the college board, this year's improvement in mathematics was largely attributable to better performance by girls, whose scores rose four points compared with two for boys. Boys, however, improved their verbal scores by three points while the girls showed no change.

Mr Handford, cautioning against reading too much into scores on tests that are not taken by all schoolchildren, said the board could not be sure of the reason for the improved performance.

"Better instruction over the years, as well as increased study of academic courses are probably involved, but we still have a long way to go. The time is ripe for a major commitment of resources to help the schools magnify and accelerate the improvement."

A long-term decline in the number of school leavers planning to teach has finally ended, however, with a slight increase in the number choosing education courses. Intending teachers also improved their average SAT scores this year by four points on the verbal section and seven in maths over 1983.

Study highlights co-ed drawbacks



Despite attempts to counter sexism in schools girls remain severely disadvantaged.

The phasing-out of single sex schools could be one of the reasons why government initiatives to counter sexism in schools and improve career prospects for girls over the past decade have failed, according to a new national report.

While the evidence was ambiguous, research had shown that many girls feared being successful in the mixed and highly competitive environment of a co-educational school, the report says.

Schools for girls were normally free from some of the forms of sexual harassment found in co-educational schools, and were not subject to the "territorial defence behaviour" of boys.

The report, *Girls and Tomorrow: the challenge for schools*, was written by a 10-member all-woman working party set up by the Commonwealth Schools' Commission - the main advisory body to the federal Government - in 1981.

It is the first major national review of girls' education since the publication of the then controversial and highly praised 1975 study, *Girls, Schools and Society*.

The report said that in a single-sex girls' school, the space and the teachers' time and attention would be exclusively devoted to girls.

This could well be important, particularly in traditionally male disciplines and subject areas such as mathematics and the physical sciences. However, even in single-sex environments, insensitive teachers can behave in ways which make girls feel unimportant, peripheral to mainstream (male) society and restricted in terms of the options available to them in life.

In very powerful ways single-sex schools can still enforce messages about "femininity" and sex stereotypes through peer group and teacher pressure on girls who do not conform.

It was also significant that in many girls' schools tuition fees were normally lower than those in boys' schools, which could be an indication of the lower value set on the education of girls.

In some co-educational schools, sing-

to allocate less of their time to girls than to boys."

This resulted in girls underestimating their own capacities and gaining a restricted image of the future. Many left school lacking confidence and poorly equipped to make conscious and informed decisions about future life-styles since their options had already been limited by the content of their school courses.

"They are likely to drift aimlessly into unsuitable employment, into unemployment or into situations where they have little control over their own destinies."

A relatively small number of girls were taking part in courses such as mathematics, the physical sciences and technology which were traditionally male-dominated areas, the report added.

This was severely limiting girls' employment and tertiary education options.

In terms of curriculum, progress towards a non-sexist education has been slow and piecemeal, (and) schools are not providing girls with the necessary information and skills on which to base decisions about their post-school life. Many curricula reinforce girls' perceptions of themselves as subordinate to and less competent than boys, and their values and opinions as less important than those of males.

The report has recommended that the federal Government should formulate a national policy on the education of girls which would provide the necessary direction for national change, and a model for schools to follow.

It also recommended that:

- Measures be taken to promote more women to senior positions in school hierarchies.
- Curriculum content at all levels be changed to make it less male-oriented.
- Action be taken to help teachers and trainee teachers to recognize and rectify assumptions and behaviours which disadvantaged girls.
- Research be conducted into ways of eliminating sex bias in schools.

Luis Garcia

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Nursery role

Sir - We write as a team of nursery teachers and nurses working in a large open-plan nursery unit and read with interest the findings of Barbara Tizard and Martin Hughes (*TES*, September 14). We were not surprised to learn that home-based learning was apparently more effective than that in the nursery and happily accept that parents can be the most effective teachers of their own young children.

It is, however, our experience that many parents feel a degree of isolation and stress during their children's earliest years and an ever increasing number are coping singlehandedly. We believe that nurseries have a critical part to play in supporting parents in their demanding role and that as professionals we should be using our expertise to reinforce parental confidence, not undermine it.

For this reason, we find ourselves becoming increasingly family-oriented and as we establish trusting relationships with parents, so we feel the gap between home and school becomes narrower - for only when we become familiar with the child in the family context, can we hope to inte-



Making the nursery environment more home-like pays dividends.

grate these aspects of experience into the nursery curriculum. Our observations convince us that the activities most likely to promote the "leisurely conversations" the researchers claim are rare in nurseries, are those which are closely related to the real world of family life, generally task-orientated and lend themselves

naturally to shared experience between adults (both staff and parents) and young children. They also serve to widen horizons, offer mental and physical challenges and stimulate lively conversation. We recognize the "persistent curiosity" and "puzzling mind" of the four-year-old and believe that to create a context in which the

child is confident to talk freely and pursue individual interests, we need to adapt our practice to make the nursery environment more "home-like" and much less "school-like". In practical terms, this has led us to abandon a number of traditional nursery practices and to keep the school-like routines of time-tabling,

clockwatching, and staff duties to a minimum, in order that staff are free to spend as much time as possible in relaxed interaction with children and parents. Comfortable, easy chairs have become invaluable props.

We find that working in an informal and flexible way, with extra planning, staff discussion, full monitoring and communication, demanding that we are a close and trusting team. The implications, we believe, for the training of both nursery teachers and nursery nurses.

While we remain aware of problems of working effectively in a large open-plan unit, we do feel that by adopting our chosen approach, it is possible to create a stimulating, challenging and relaxing environment which is devoid of home-based learning - as offer an alternative to it.

ANNA HOUSE, JACKIE FOR CAROL WILLIAMS, JUNE HOWE and ANNE MASSEY, Carlton Park Infant and Nursery School, Carlton-in-Lindrick, Worksop, Notts

Keeping the peace

Sir - It was with some surprise that I read your article on Eaton Hall International (*TES*, September 21).

I am at present at Eaton Hall on a course in teaching English as a foreign language. While it is true that during the week there are around 200 police billeted in the college, I have at no time found their presence disagreeable.

Although they have to leave for work at about 1.30 am, they must do so quietly as my sleep has never been disturbed. Their presence in the bar has, in fact, added a certain ambience, (who likes an empty pub anyway?). They have been given their own television viewing facilities and no longer use that of the students.

While I do not suggest that the complaints received were unjustified, I believe that the college acted quickly and effectively to remedy the problems.

I would like to add that, backed by the unstinting help of the course tutors the Dip Tasp course that I am attending is proving to be every bit as interesting and stimulating as I had hoped.

CHRISTINE BRAITHWAITE
Chambre de Commerce et d'Industrie
Perpignan
France

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A bitter pill that
would rejuvenate
the profession

Sir - Your leader (*TES* September 21) was of considerable interest to me. As the husband of an (acting) senior teacher in a Bradford comprehensive, I can report that she works a lot harder in her role than I do as a GP in a middle-class suburb. What really interests me is your survey's findings that teachers recognize that there are many inadequate and incompetent colleagues in their midst, and that "something should be done."

Show commented that "all professions are conspiracies against the laity", an idea repeated more recently in "Disabling professions".

In my profession, if we could either improve or get rid of the manifestly worst 10 per cent of our colleagues, we could bank our pay cheques with a

clearer conscience that "professional standards" meant something and that the taxpayer who foots the bill is not being misled.

This is not a new problem, and the fact that it is hardly ever discussed, still less faced, tackled or solved, simply shows what a difficult problem it is. Nevertheless, some kind of audit, re-certification or genuine professional sanctions must soon be undertaken, if sufficient progress is to be made.

Merely to gripe on about pay and conditions may be important, but it misses the crucial point.

DR S E JENKINSON
Newton Way
Baldon
Shirley

No faith in their
own product

Sir - I wish that I could take comfort from your NOP figures (*TES*, September 21), which would seem to indicate that teachers are turning away from the Tories. I somehow doubt it, but the proof will obviously be teacher voting figures after the next General Election. There must, however, be a strong streak of masochism in the profession when after five years of educational butchery by the Tories, 25 per cent of teachers would still vote for them.

The really damning statistic, however, in the NOP survey is that some 12

per cent of primary teachers and 11 per cent of secondary teachers are sending their children to private schools!

How on earth do these teachers expect parents to have faith in the system when teachers who draw their salary from it, are opting their own children out of it?

JOHN HODGSON
48 Capel Avenue
Peasehaven
E. Sussex

An end to caning

Sir - I observe in your report (*TES*, September 7) on the document produced by STOP that in four authorities, all secondary schools retain the use of the cane. I have written to the anti-caning organization, with whose aims I am in agreement, that this is inaccurate. Hookergate School under the Gateshead authority has a clear statement in its prospectus of the school sanctions, and corporal punishment is not included within the list.

The final "justification" for corporal punishment rests on what is accepted as the behaviour of a reasonable parent, which eventually must rest on the majority view of parents. Perhaps when more and more parents who believe, as I do, that institutionalized and formalized violence can never be part of an adult-child relationship, personally object, caning will rapidly disappear.

D A ROBERTS
Headteacher
Hookergate Comprehensive School
Rowlands Gill
Tyne and Wear



Lagan College

Career-minded

Sir - The Manpower Services Commission's recently published review of the first year of the Technical and Vocational Education Initiative, makes interesting reading. It is surprising and disappointing though that the important role played by careers officers has not merited mention.

In such a new venture, careers information and objective vocational

NUT and INSET

Sir - It is unfortunate that your headline "NUT accepts loss of special training courses" (*TES*, September 14) gives a misleading impression of the NUT's response to the ACSET report. In fact the submission stresses most strongly our view that the NUT cannot support the recommendation to discontinue specialist initial training courses as recommended in the ACSET report until equivalent post-experience in-service courses are developed to provide high quality preparation for teachers of children with various disabilities including hearing impairment. In developing such courses, the experience of those currently providing initial courses should be fully utilized and centres of expertise in training to meet special needs should be safeguarded. We also welcome the idea advocated by the report of involving experienced serving teachers in devising new training courses.

ALAN EVANS
Secretary
Education Committee
National Union of Teachers
Hamilton House
Mableton Place
London WC1

Lecturers' training

Sir - In its splendid advice to the Government, the University Grants Committee proposes a number of significant innovations relating to university training.

These include the possibility of modular courses and credit transfer schemes to meet the needs of more broadly educated entrants; making continuing education a major responsibility of the universities; providing up-to-date curricula and learning resources; developing computer awareness for staff; taking full advantage of advances in technology to increase teaching effectiveness.

Such innovations are not easy to achieve and some have been tried before with marked lack of success. A reason is not too difficult to find - such innovations require not only an experienced, but a trained teaching force. It is therefore particularly to be

welcomed that the UGC maintains a shies and the Committee of Vice-Chancellors and Principals to "look at the question of training and development for new and existing staff". The UGC also considers excellence in teaching could constitute a ground for an increase in grant.

Many we suggest that such excellence might be best achieved through a service staff training and development unit that real evidence of substantial provision in that area would be shown in the first instance by a well appropriate ground for a grant increase.

DAVID BOUD, JOHN CORRY, PATRICIA CRYER, PAM NICOLO, LEWIS ELLOR, HOUNSELL and RUTHERFORD
Staff Development Group
Society for Research into Education
University of Surrey

Lagan not alone

Sir - As someone who has taught in Belfast for the past 20 years, I am becoming a little tired of the continuing media coverage of the Lagan College which represents that school as a unique haven of tolerance and compassion in our Province.

Sara Parker's article (*TES*, September 14) makes the assumptions that integrated education is self-evidently a desirable objective for our children and that all the parents of Lagan

College children have sent their children to school principally with that objective in mind.

I would challenge both these assumptions and would request that the bringing together of young people and the understanding of tolerance and compassion should be quietly taking place in many schools both inside and outside the Lagan system.

FRANZ THOMPSON
118 Marlborough Park Central
Belfast

Silence doesn't mean acquiescence

Sir - The Green Paper "Parental Influence at School" was published in May 1984. It was rapidly out of print, the copies being presumably snapped up by I.E.A.s. This means that by the time schools had come out of the examination season, information on the proposals was hard to come by. In Berkshire we were lucky in that a summary of the Green Paper was produced by the I.E.A. and made available to all who were "interested". It just so happens that a governor of the school we represent as teacher governors works in the I.E.A. He found out about the summary and circulated it to our governors. He also convened an extraordinary meeting to consider the proposals. We eventually considered them on September 17 and will therefore have the deadline of October 1 for returning comments to the Secretary of State.

We know of few other governing bodies in as fortunate a position as ourselves. Some governors, in isolation until the next scheduled meeting (which stands a good chance of being after October 1) will have only received the vaguest information about the proposals. They will therefore not respond. The fact that our governing body viewed many of the proposed changes with alarm will stand little chance of persuading the DES.

We would urge that what could well be a small response to the Green Paper

from governing bodies is not taken by the DES to be acquiescence. The timing of the proposals, the way in which they have been disseminated, and not the content of them, make it probable that the response will be poor. How can a paper which requires the production of an annual report by governors "free of charge" (whatever that means) be taken seriously when it can't get its own circulation right in the first place?

NORMAN LAW and
PAUL BULLOCK
Staff Governors
Wainwright's Cope School
Woodley
Reading

Parent governors

Sir - I read Andrew Bennett's article, "The horror stories that parents tell" (*TES*, September 21) with great interest, and I could add a few stories myself: for example, the county councillor (not from Clwyd, I hasten to add), who in October 1983 said (I heard him) that you couldn't have parents on governing bodies because they didn't know how to behave in committees.

But horror stories and gossip should not cloud the issue. Parents should have a greater say in school manage-

ment. The 1980 Education Act made statutory provision for two parents on governing bodies - a mere token gesture towards partnership, and slow progress has been made in some areas towards its implementation. The 1981 Act limiting the number of seats held by county councillors has increased patronage, the local member can now choose up to five governors to support his view at meetings of the governing body.

I agree that greater parental awareness of the work of the governing body and parent governors is essential - this takes time and effort on the part of Government, I.E.A.s, teachers and parents' organizations like the National Confederation of PTAs. When, and only when, parents participate in school governance as equal partners with teachers, elected members and community representatives, then the greater their contribution will be because at last there will have been a positive acknowledgment that parental influence has value.

Further, if the work of the parent governor is supported by an active home school association, the greater will be the knowledge and understanding of the school-gate mum. It is the class chicken and egg situation.

No one expects changes in the structures of governing bodies to cure all the ills on the education service, but there is sufficient evidence to indicate

Unduly negative

Sir - I have read the article on children's knowledge of the Third World (*TES*, September 7) with interest. The results quoted are very similar to those from my own research. 230 children in Bradford and Kidderminster were presented with a blank map of the world and asked to shade in the Third World. Every child shaded at least some part of Africa, while only one or two shaded South America or parts of the Caribbean.

However, I fear that the article probably only told half the story. From my own work, I would suggest that those children who knew "something" about the Third World (i.e. the 77 per cent who knew about Africa) may have had a very distorted view of it. With my work, the term "Third World" suggested starvation, poverty, agricultural practice and people unable to look after themselves in all of the children's minds. Not one spoke of technological advances that have been made; the Green Revolution or any positive feature of the countries. Although many of the children suggested that the images came from the television, a significant number suggested geography, history and RE lessons as being the source of the images. This, I fear, is a reflection of the way in which the textbooks in school would show this.

Therefore I think it is important that we not only teach about the Third World in our lessons, but that we also

present a more balanced picture of the areas in which the majority of mankind live.

BRIAN ROBERTS
Geography Department
Orwell High School
Felixstowe

Structural change

Sir - I have only just read the letter "Production Line" (*TES*, August 3) in which your correspondent, referring to a new management structure, asks "Does anyone know of anything like this in the whole of further education?" The answer, is "yes."

This college adopted a new management structure 10 years ago and many others have changed since then, some using the experience of South Trafford and others independently coming to similar conclusions.

It is quite clear to me that the traditional departmental structure leads to a fragmented college while the traditional range of functions of the head of department prevent him (or her) from dealing efficiently with staffing, resources, student problems or academic development.

I do not know Croydon College but it is clear from Mr Phillips's letter (*TES*, September 14) that, as in our case, the purpose of the change is to improve the efficiency of the organization so that students benefit.

FRANK ANSELL
Principal
South Trafford College
of Further Education

the new role of the principal? Is the person in this post mainly to act as a figurehead?

The new role of vice-principal is that of maintaining the day-to-day management of the college, being responsible for both the academic programme and the resources; but are the faculties so happy with this? The evidence is, surely, that they are feeling distanced, remote from the central powers that be.

I shall be looking for places for my daughters soon, but must seek colleges which are managed in order to advance educational values.

HELEN GARDNER
7 Merton Avenue
Rustington
Sussex

Soft option?

Sir - May I ask those teachers who have finished reading the articles in the September 21 issue of *TES* to cut out the advertisement on page 21 and give it to the home economics department? You will no doubt remember the one girl with mixing bowl in hand, possibly even containing some highly caloric mixture to compound her sin of having opted for "a traditional girls' subject" as a "soft, comfortable choice".

All teachers are hard pressed to obtain free teaching materials and this could be added to any collection of advertisements used in consumer education. Standards of advertising have risen considerably in the last few years and this one could fill a gap, as it is not usual to find anything so blatantly emotive, prejudiced and clearly ill-informed as to the contents of home economics courses. What a pity the sponsors of this (the Equal Opportunities Commission and Women into Science and Engineering) only advertise in *The TES* instead of reading it as well; since the excellent "Extra" of September 15 on home economics by Dr Evelyn Thorne seems to have escaped their attention.

Most of the education service works under great pressure and I feel it sad if we do not all consider it part of our job to give support and help to our professional colleagues rather than trying to undermine them.

We parents want equal representation with teachers, elected members and community as recommended by Taylor and restated in detail in the NCPA response to the Green Paper.

Believe me, Mr Bennett, those parent governors and many many parents have no taste for further procrastination. The debate has been long and arduous since the publication of the Taylor Report in 1977.

WE PARENTS WANT EQUAL REPRESENTATION WITH TEACHERS, ELECTED MEMBERS AND COMMUNITY AS RECOMMENDED BY TAYLOR AND RESTATED IN DETAIL IN THE NCPA RESPONSE TO THE GREEN PAPER.

SHEILA NAYBOUR
Chairman, Clwyd Federation of PTAs
Vice-Chairman, PTAs of Wales
Mold
Clwyd

MARY DAVISON
Home Economics General Adviser
Secondary
Wiltshire County Council

Hard sell
Sir - Does *TES* exercise editorial control over the advertisements it carries? Why, in the September 21 edition do we find a half-page article on classroom male-female equality, and a full page of female legs advertising technology? And, of course, a man was operating the machine.

MARGARET GRIFFITHS
Gaynes School
Brackendale Gardens
Uppminster
Essex

Courses

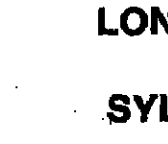


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Network for aids

EDWARD PLAYFAIR

How many others were refreshed by Ivan Crowe's smart idea of a central disseminating agency for resources designed by teachers themselves (TES August 31). So smart in fact, it is a wonder no one thought of it before. Having spent much of my summer redesigning teaching materials for just one course, I already have the nagging feeling that something "ought to be done" about another course. The process of material selection, worksheet design and drafting seems endless. Surely, somewhere, someone is doing exactly this to the same course and with the same approach. In fact, I suspect that more "do-it-yourself" resources are used in the classroom than all the published variety put together. What a sensible idea then for us, as a profession, to establish a library or network where teaching aids can be stored or retrieved. If such a collection were properly indexed, it would then be easy for teachers to consult their catalogue, and with the aid of a computer terminal or microfiche display, rapidly scan the resources avail-

able in their chosen area and make their selection for a fee.

The benefits would be manifold:
 □ It should promote diversity by being relatively free of values about content or approach, and allowing the customers to judge the materials for themselves.
 □ It gives vastly greater access to the diversity of teacher-designed materials, and lead to a more effective use of resources (especially time!).
 □ It should lead to high standards of quality and will make it harder for teachers to settle for rushed or messy second-best productions which then prove unsatisfactory in the classroom.
 □ It creates the opportunity for like-minded teachers to cooperate in fruitful partnerships where they are obviously thinking along the same lines, across subject boundaries perhaps.
 □ Far from elbowing publishers out of the scene, it should be the seed-bed from which potential authors or teams can be recruited by them.

There are also problems which would need to be resolved. I would suggest that some of them are:
 □ What type of material should be classified. Should photographs, videotapes, audiotapes and film be included or should the agency initially restrict itself to building up a collection of easily photocopied monochrome sheets?
 □ How should materials be selected and what grounds, if any, should there

be for rejection?

□ What should the balance be between institutional subscriptions, fee-paying for authors and copyright payments to users?
 □ How could the indexing system be designed to stimulate cross-fertilization rather than confine resources to narrow subject areas?

Such an agency could be established at a level by enterprising groups of teachers, perhaps it has been already. But to be really effective and innovative it should be a well funded and well-staffed national agency with highly decentralized outlets and managed by a committee of practising teachers, advisers and MROs.

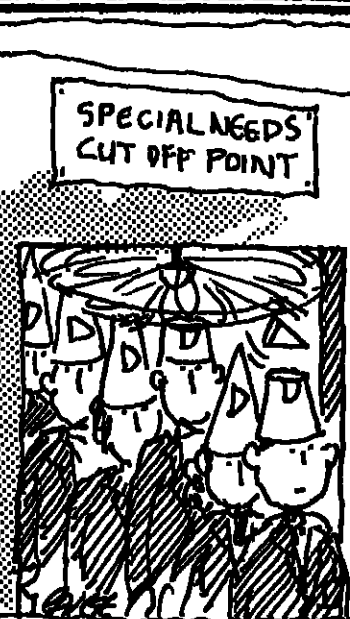
Can we have some correspondence about the idea in *The TES*? If anything is to happen, at least one i.e.a. will have to be persuaded to come forward with a pilot scheme or a working party to look into the proposal. Could we have some indication of the support such an agency would achieve or news of any similar agencies which may exist on a smaller scale?

I think the idea is full of potential and could lead to a real breakthrough in teacher communication. It should be welcomed by everyone who wants a thousand resources to bloom in the secret garden of the curriculum. Let's explore it.

Edward Playfair is a science teacher at Walthamstow Senior High School for Girls.

Can't trust a special

HANS GRUNDIN



The thought-provoking article "You can't trust a special" by Caroline Gips and Harvey Goldstein (TES July 27) has, in my view, only one weakness: it does not go far enough in denigrating "special needs cut-off points". It can be complemented in two ways.

First, the definition "significantly greater difficulty in learning than the majority of children". Strictly interpreted, this applies to all children significantly below the mean. If by significant we mean "statistically significant", then it applies to those more than one standard error of measurement below the mean. For example, on an IQ scale with standard deviation 15 and reliability 0.97 (quite common values) it applies to all children below IQ 97 ie 42 per cent.

If we decide that majority means two thirds rather than just over half, we find that, on the same assumptions, all children with IQ below 75 are

included, ie 27 per cent. Cut-off like these could be used to estimate the number of children "special needs". Obviously, the nonsense. The only thing to learn from this is to maintain a premonition to tell us how we are.

My second point relates to a notion of "28-month deficit" in age as a criterion of "retardation". Gips and Goldstein conclude that this "sounds reasonable" but remains arbitrary. It is, in fact, in that it means different things at different age levels.

For example, examining the Hunter and Grundin literature, I find that the proportion of children with a "deficit" in reading age at least 28 months varies with age, as follows:

Chron age	28-mo deficit
8+	21
9+	18
10+	13
11+	12

There is no reason to suspect the Hunter and Grundin data differ much from the others in this respect. In fact, research carried out in Sweden in the mid 1970s shows exactly the same trend: a "deficit" in reading age of two to two and a half years becomes more common as the pupils' older (Ed Research No 20, Nat Board of Ed, Sweden 1975). Any criterion of this kind, then, is misleading, unless strictly in one age group only.

Given the drawbacks of any "cut-off point", we would do well to abandon further attempts to set such cut-off points. Instead we can put the onus on those who wish a child to special education to show what the child's abnormal "need" is - but what benefits that particular child can be expected to derive from being in that particular special education facility, and how these can be compared with the possible benefits of taking the child out of the school situation. Then, and only then, can we start to "trust a special".

Dr Grundin is a senior lecturer in the Institute of Educational Technology, The Open University.

Annual reviews

JOHN JENNINGS

Richard Nicholson's article on staff appraisal in schools (TES September 7) prompts comparison with practice in an FE college dealing mainly with non-advanced work.

The words used may be critical in gaining acceptance. After much deliberation we chose the term Annual Staff Review for an extended discussion between each member of staff and his head of faculty. Although this discussion is elective almost all now take up the option which is also extended to include the heads of faculty (meeting the principal or vice-principal).

The intention is that the review should be a two way exchange of views, hopes and expectations, resulting in an agreed record of the meeting and a plan for action. From the accumulated feedback the heads of faculty are able to formulate individual and group staff development needs which are coordinated by the college staff development committee.

To retain staff confidence, it is necessary to separate the problem of the poor or ineffective teacher. Such problems cannot, in any case, be allowed to drift on an annual cycle. Positive sensitive action is required. The provision of an initial support such

as the assignment of a mentor to new teachers (or as we do for the new to the college regulations and experience elsewhere) is desirable.

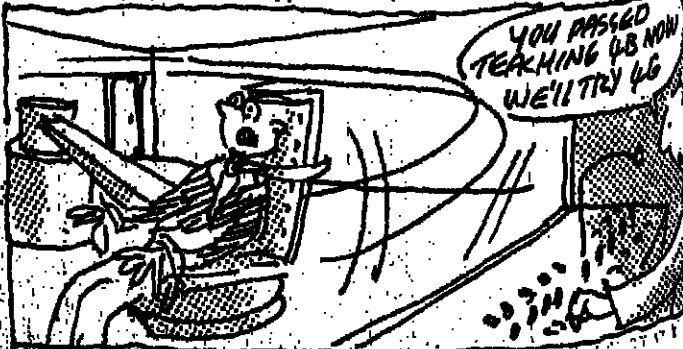
Monitoring teaching effectiveness eventually means observing what is going on in the classroom. For this a climate of exchange visits to the classroom as an accepted norm is required together with team teaching groups and self-reflection procedures. Self-reflection and subject sections may prove more effective than occasional visits from high.

Student assessment of staff effectiveness is likely to present difficulties in school but in FE HE but may be worth exploring some situations.

Staff reviews and appraisal are time consuming but it is also an investment if used effectively. In college, the heaviest load has to be carried by the head of faculty with 42 teachers (and with a dozen support staff) have a parallel review process. This is thus argued that in the schools one or more deputy heads might need to participate in the process.

Finally, recognizing that the objective is staff development, the essential key to the exercise is the ability to take account of the identified needs. This requires the material and financial resources of the college and the support of the staff and the college.

John Jennings is a professional staff member at Barnet College in Herts.



Jim Smith is Head of The Allertonshire School, Northallerton, North Yorkshire. He has recently returned from a year of research at the Department of Social Policy at the Cranfield Institute of Technology. See also "Voting with their feet" opposite.

Don't all rush

JIM SMITH

The letters of invitation were sent out at the beginning of term. "Nominations are invited for the post of parent governor", there are two vacancies. The closing date has now passed. Not one nomination has been received. Over 1,000 pupils in the school, and apparently not one parent can be persuaded to seek election.

How very embarrassing at a time when the pages of the educational press pursue a debate on the exact number of parents that should sit on any governing body. I follow the debate with interest, but in my present predicament it seems as relevant as the number of angels that can stand on the hypothetical head of a pin.

How much more embarrassing, in that I have just returned from a year of practitioner research, directly related to the various methods of achieving a partnership with parents. I have spent a good part of that year listening to parents, talking to them in their own homes, and have been continually impressed by their high level of interest in the work of the schools that their children attend. Indeed my subsequent MSc thesis, presented less than a month ago, was sub-titled *Let the Parent Speak*, an indication of my conviction that they have much to tell us.

How much we have to learn. The many parents to whom I spoke last year were not interested in the apparent power of parent governors. They were interested in real participation with real teachers. They didn't express any wish to become involved in the alien bureaucratic structure of the school, but sought a sense of real



involvement with those who actually taught their children.

This is not some new revelation. It was well recognized by both A W Bacon and by Lynch and Pimlott when they presented the results of their respective research projects in 1976. There was scant evidence then to suggest that "parent power" in the management and government of schools was desired by more than a tiny minority of parents. The same is true today. The evidence of my own research would indicate that parents have not changed in this respect.

Therefore my failure over the last few weeks, if failure it is, has been in my inability to make contact with that tiny minority - those parents who wish to become part of the school's bureaucratic structure.

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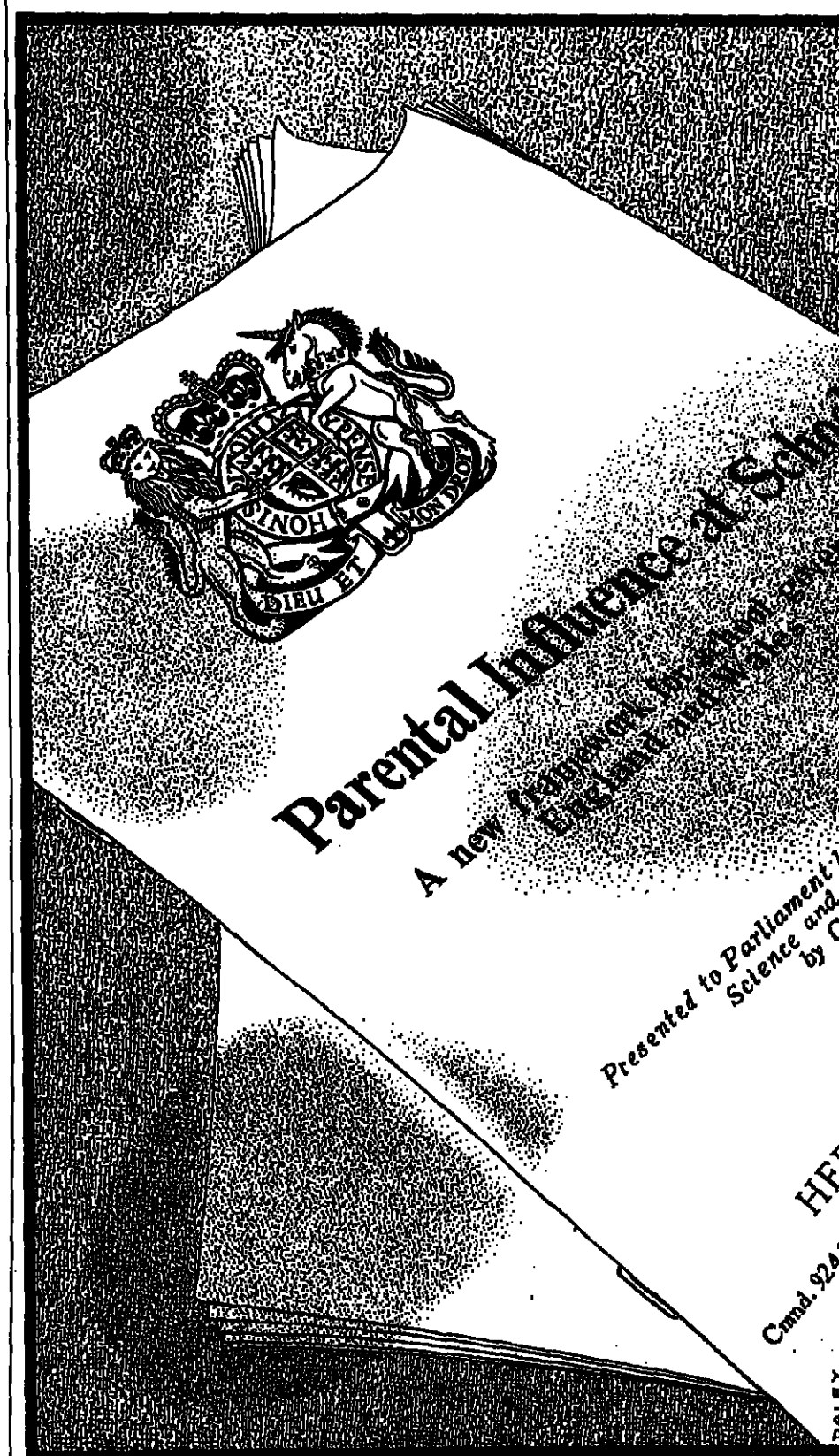
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(0087)

FEATURES

Voting with their feet?

Parent governor elections are now in full swing but some practices make them a mockery, Sara Parker finds.



like with the school and the attitude of the head and staff. Felicity Taylor, chairman of NAGM, said: "Elections tend to be organized by the head and he can make sure that the people he wants to stand are nominated, simply by saying 'why don't you nominate so and so'. If there is a low turnout, it is easy to manipulate a result, and even if you haven't, others will think it is manipulated."

She pointed out, however, that there may be nothing sinister about a head pushing a certain candidate. "It may just be because they believe it's better to have someone who they think is going to turn up and do a bit of work." But she said there were cases where a head will wield his or her power unfairly, citing the instance of a delayed by-election after a parent governor resigned, which meant there was no parent representation on an interview panel for a new head. Some authorities advise that parent governors should stay until the beginning of the next academic year to avoid such problems, even if their child leaves earlier.

In another instance, a head is said to have made the life of the parent governors so difficult - asking them to account to the whole of the school for anything they said - that other parents were reluctant to come forward.

It is not very realistic to expect parents suddenly to start turning up at meetings or putting themselves forward for election where there is no prior history of parental involvement in the school. Fewer than half of all schools are thought to have parent teacher associations, for instance.

Getting to know the candidates is obviously easier in a small school in a close-knit community. A meeting where candidates can be asked questions also helps, though this is by no means a standard feature of parent governor elections.

Some believe the would-be parent governors should make a declaration of their political stance. Felicity Taylor feels however that "the job is about being a parent, not about politics".

Candidates may be asked to provide a statement about themselves though East Sussex suggests limiting this to two or three lines or 36 words, which hardly provides much scope.

Some i.e.s give one vote per parent, some one per family, or only to the parent who registers the child. The IEA allows the vote to anyone who falls into the category of parent for other school purposes. That can be as many as four, if partners have split and remarried.

In addition, there are those like the IEA who lay down stringent regulations about who can stand - for example, anyone employed by the authority, other teachers in London or those with relatives working in the school are disqualified.

Such conditions are aimed to draw in parents who are not normally involved in school-life, rather than just having a teacher from another school as parent governor. Other authorities, such as Sheffield, work hard to make sure the elections are seen to be fair - getting governors or parents from a school meeting to run the election and act as tellers. In many, however, the head acts as returning officer, perhaps assisted in the count by a school secretary.

'A delayed by-election meant no parent at the interviews for a new head'

doesn't approve of - no parent is going to stick their neck out in a school where they've got a child."

Reluctant even to be named, she told how she was also put off standing at her child's school because when the nominations were invited by letter, parents were told they had to have the backing of five others with children at the school if they wanted to stand.

"Friends I've met since have said 'I'd have nominated you', and likewise I would have nominated them, but I wasn't going to go round knocking at five doors and asking people to sign my nomination form," she said. In the end there was no ballot because there were only two nominations for two places. "It was done almost surreptitiously. You got the letter, were told to fill it in and send it back - and that was all."

Cleveland often has to circulate the parents again because there are not enough nominations first time round.

Barbara Bullivant, secretary of the National

Association of Governors and Managers (NAGM) highlights another reason for parents' apparent apathy. "The thought of being a parent governor is off-putting to most people. The majority of parents don't want to interfere in the running of the school. They feel they haven't the time, haven't the knowledge. They may not even have been into a school since they were there themselves."

The London Borough of Newham has recently run two one-day courses for a total of 500 considering standing as governors - many of them parents. Part of the reason for its pioneering approach is that by September next year it will have to find many more governors. In the past, several schools have come under only one board of governors, albeit with two parent representatives. Now, under the 1980 Act, each school will have its own governing body and the Borough is taking the opportunity to increase parent representation to four on each.

But the key to parent interest must ultimately

Selling the subject

With reference

Referees may be writing at one and the same time for the most careful and sympathetic of tutors and for the most idiosyncratic and traditional (to whom any explanation for underachievement is a lame excuse). Tact and clever use of language are therefore essential allies in dealing with selectors. If the suggestion that an Oxbridge

"The language remains one of our most advantageous assets and exports" claims Edin-

Open-days seem to provoke as many differ-

Adrian Barlow is head of English at Monmouth School.

The fact is, we don't talk to each other. We discuss, or complain about, the pupils, the headmaster, the curriculum, the school, the school board and sometimes each other but we don't talk about the business of teaching. We come close to it occasionally when a publisher's representative spills his goods over the staffroom table and invites us, we imagine, to be critical. Then we may air our dislike of a particular textbook's treatment of this and tell each other that we really don't care for that method at all.

Pssst!

A black and white illustration of a man with a beard and a headband, looking surprised or excited. He is holding a bouquet of small white flowers. Above him is a sign that reads "STAFF ROOM" with several dice and a butterfly flying around it.

My concern now, as a talent spotter on the lookout for future teacher-trainers, is that these exciting prospects do not produce offspring that end up in the bone yard of good ideas that died. A central theme of MEP's INSET strategy has always been to identify those teachers who, with MEP training, could be used by their i.e.s. to staff local INSET programmes. We call it "cascading" and without it MEP strategy would make little sense since the level of funding dictated that only a few teachers could be offered places on MEP courses. If the programme was to have maximum

The greatest barrier to "cascade" and to the sharing of expertise between teachers, is the nature of the job itself. Teaching is not the sort of work which lends itself easily to being left for two days while the head of English goes off to the teachers' centre to run a course in the use of word-processors in children's acquisition of language. It would not be so difficult to obtain the release of a Superteach for this kind of work if there was some direct benefit to the school or if it only happened once a year and then to only one teacher. Offering

When I first heard about "cascade" I compared it to pyramid selling in which, you will remember, everyone ended up selling everyone else life insurance. The more talent I discover among practising teachers the more I come to like the comparison.

Bob Sheed is MEP Coordinator for Computer Education and Computer Based Learning (Eastern Region).

How referees deal with candidates they consider unsuited to university or particular courses is

The little boxes in which referees used to put their grade predictions were abandoned so that referees can set the predictions properly into the context of the candidate's academic development, including any personal problems and whether or not past results and predictions are a fair indication of academic potential. The selector, therefore, theoretically has no option but to read them together. The order in UCCEA's checklist of factors to cover is also designed to make selectors read about the candidate's academic background and his/her projected grades, *after* information on the school, its curriculum and any teaching problems. They are then more likely (the reasoning goes) to take these into account, and make allowances for

"Suitability and motivation for the [position] are the most important factors," even though tucked away near the bottom of UCCA's checklist, counts strongly with admissions tutors and some are critical of referees handle this. It does not help if a candidate has not bothered to find out what referees selectors see as important - the candidates easily be rejected even though they have good qualifications, because these have not been mentioned. There is a long list of referee's questions that a candidate should be prepared to answer. What does he think of his (her?) behavior?

A reasonable reference will take up all the space allowed if UCCLA's check list is followed — too short and some selectors will believe there is not much worthwhile to say about the candidate. Admissions tutors, with full teaching loads and hundreds of applications to process (even a spare ten minutes on each adds up to a great many hours), plead for forms to be easy to read and assess. References can help by writing in straightforward, clear and unambiguous language, by sticking to the point, and by being economical in their use of words. One admissions tutor tactfully suggested that references are not the place for the writers to show off their own literary talents. "Clever" and/or witty prose — good, indifferent or excruciating — is not popular if as a result reference takes longer to read or the writer's meaning gets obscured.

BOOKS

Battle cries

The Oxford Book of War Poetry. Edited by Jon Stallworthy. Oxford University Press £9.50. 0 19 214125 2.

In his diary for 1923, Siegfried Sassoon records a conversation with Walter de la Mare in which they discussed Middleton Murry's knack of making people uncomfortable. "You know, Siegfried," said de la Mare, "you made people feel rather uncomfortable during the war." Sassoon was remembering Murry's *Nation* attack on his poems, in which they were characterized as a cry with "neither weight nor meaning of its own." We long to silence the cry, whether by succour or sympathy, or by hiding ourselves from it. They touch not our imagination but our sense. Their effect is exhausted when the immediate impression dies away. Yet they have continued to be printed, and here in an anthology of war-poetry whose earliest contributor lived around 900 BC, they again give perhaps the most vivid sense of what it was like to have endured battle. Without striving for literary effects and rising above mere discomforting propaganda, they tell of the genuine, individual histories which lie behind the newspaper reports and later, large-scale surveys.

In both a social and literary sense, excellently explored by Paul Fussell in *The Great War and Modern Memory*, that war has gained a pivotal position, the one with which poetry is invariably associated. Many of the poets that survived it—Sassoon, perhaps, among them—found it difficult to write about peace with anything resembling their earlier force. While being unlikely to

join that select number of anthologies that set their contents, familiar or otherwise, in a distinct light which reflects the character of the editor, Jon Stallworthy's new Oxford book is a useful reminder of the extent to which war has permeated the lives of poets far from the battlefield.

It is the delight of the anthologist, as Geoffrey Grigson has written, to hunt out the obscure and the odd; and it is with pleasure (if that is the word) that after reading again Virgil, Johnson (careless proof-reading of the footnote has Charles XII of Sweden alive long after the poem has described his death), Byron and Hardy, one chances upon Edgar Wallace:

The clink of a stopper and glass:
A sigh as the chloroform drips:
A rattle of—what? on the grass,
And bluer and bluer the lips.

"Orderly, take it out.
It's hard for his child, and it's rough
on his wife,
There might have been—sooner—a
chance for his life.
But it's War! And—Orderly, clean
this knife!"

It might not be the confrontation of Aeneas and Turnus, but that dreadful "it" and the final image of the filthy knife have the force of real poetry in a way that anticipates many who were to follow. If Professor Stallworthy's introduction offers something of a whistle-stop tour rather than a discussion of all the issues to which the following poems give rise, it amply shows that this is a subject that, unlike those of some recent Oxford Books, merits such a compilation. One remains impatient for his biography of Sassoon.

Christopher Hawtree

Family affair

The Benn Inheritance: The Story of a Radical Family. By Sydney Higgins. Methuen £12.95. 0 297 785249.

Tony Benn is to some a prophet preaching the socialist new Jerusalem, while to others he is a dangerous fanatic whose personal ambition has destroyed the credibility of the Labour Party. Sydney Higgins claims that Benn's achievement is to have kept the Labour Party true to its socialist roots, roots that have been undermined by a pragmatic leadership. If this is so, though I believe it to be a gross overstatement of the case, then the book ought to have discussed the contents of Benn's policies and their implications for the power struggles between Left and Right within the Party. What passes for analysis is no more than a cursory glance.

Benn's part in the interminable warfare in the Labour Party from the 1979 defeat culminating in the rout of June 1983 is hardly treated. Neither does Higgins convey the sense of exhaustion that was felt in the Party and which largely resulted from the activities of rival pressure groups and the whole Militant business.

The author is on firmer ground when he is chronicling the history of the Benn family up to 1950. The family founder, the Reverend Julius Benn,

knew crushing poverty in the 1850's. When attacked for his Congregationalist faith by the Rector of Tiffeld he promptly left the church taking most of the congregation with him, only to return on condition that the attacks on the Reformation ceased. His furniture-maker son, John Benn, who when reduced to poverty by his father's actions, founded his own journal the *Cabinet Maker* in 1880. This was the forerunner of Benn Brothers publishing. Julius Benn was killed by John's brother William, who later became known as William Rutherford, (the father of the actress Margaret Rutherford). Higgins shows that personal tragedy and political defeat only made the family more determined. In a sense, that is the strongest impression the book gives.

Again and again in Tony Benn, we can see traces of the effects of this tumultuous history. Family history as biography can be treated both sympathetically and yet critically. But when it comes to the biography aspect, the reader expects the author to explore and sometimes challenge the changes of view of his subject, especially when that subject is a politician. This book is neither critical nor rigorous, it is merely sympathetic.

Richard Evans

Before a fall

Put It In Writing. By John Whale. Dent £6.95. 0 460 04582 2.
Good English Guide. By Harry Fieldhouse. Dent £2.95. 0 460 02289 X.

Every day we hear that standards in the use of English have fallen, are falling, and are likely to fall further yet. Fortunately, from every corner of the partially-ruined site, self-appointed cicerones bustle forward to guide us through the intricacies of our labyrinthine language to steer our feet away from its grosser pitfalls.

John Whale's book is a reprint of a series of short articles that first appeared in the *Sunday Times* magazine. Each is prefaced with a brief passage of usually modern writing that Mr Whale admires (sometimes rather oddly) and goes on to consider some

specific aspect of style or usage—rhythm, repetition, relative clauses, hyphenation, alliteration, metaphor, etc. His range of reference is impressive and his book as a whole brisk, detailed and agreeably opinionated—except, of course, where one happens to disagree with the particular opinion. *Good English Guide*, an Everyman Paperback, is a corrected and revised version of a book first published in 1982 to considerable acclaim. Arranged in two alphabetical collections, "Words in Particular" ("picket, plaff, placebo, plastic") and "Sentences in General" ("Idiom, imagery, imperatives") it also provides much instructive value.

Books like these make one nervous about every sentence one writes—and very properly so.

Robin Ravensbourne

Jewels of memory

The Leavises: Recollections and Impressions. Edited by Denis Thompson. Cambridge University Press £15.00. 0 521 25494 9.

Now both Leavises are dead, the new men in literary studies, wrestling with hermeneutics and narrative theory, must be wondering what the fuss was about. Americans, who dominate nowadays, have never grasped it. The grossly wide-of-the-mark caricature of Leavis as "Dr Simon Lucero" in Frederick Crews' over-rated *The Pooh Perplex* is a case in point.

The value of this collection is that it gathers the memories of contemporaries, who remember the couple when they were young, and many of the reminiscences are valuable in their own right. Gwendolen Freeman, who rightly attacks Leavis's over-simplified view of the eighteenth century, incorporates asides of social history such

as the jargon and etiquette of Gorton in the 1920s.

Among the jewels of memory, I most enjoyed the account of ERL by his niece Mary Pitter, showing us Leavis the country boy, recording the habits of sticklebacks, expertly scything grass, skating, walking. Professor L.C. Knights describes the *Scrutiny* days and regrets that Leavis's judgments and attitudes "became a kind of orthodoxy within the prevailing orthodoxy... his battle-cries became shibboleths". Professor Muriel Bradbrook's contribution is complementary to the obituary of Mrs Leavis published in *The Cambridge Review*. There is clearly more she could tell us.

Much of the book is beautifully written, elegant, perceptive. But its overwhelming impression is of sadness. So many contributors write of unprovoked attacks by Mrs Leavis. The editor suggests that her terrible

ill-health may have been psychosomatic, mental poison unpurged. So Mrs Crook's record of a long and clouded friendship with her husband is refreshing.

I was taught by them both in the 1960s, when they were legendary figures. They treated me kindly, but my tongue could be sharp. I do not then know how ill she was, nor how badly such part-time teaching paid. Her bitterness at having a career of her own is understandable. As a teacher she was generous in keeping me always on the ball. Her opinions were often eccentric, especially when taken over from her husband and not integrated into her own thought-processes, which delighted in recording information. Bubbly, this was exhilarating. She was a better scholar than critic.

Valerie Grosvenor Myn

PAPERBACKS

Traveller's check

Suddenly, travel writing is fashionable. Great ideas of it flood the shelves. Some of it, like many ideas of it, is rather specialized. While one might enjoy harking back to an ancient romanticist, with John Macfarlane's *The Bird of Dawning*, nineteenth-century tales like Lady Brassey's *My Year in the South Seas* or Joshua Slocum's *Sailing Alone Around the World* are heavy weather. More engaging is the *Century Travellers* (also £6 each) you can sail with George Selkirk and Isabel and the Sea, a hilarious account of a trip through the canals of France into the Mediterranean to Greece undertaken by the *Century* in 1914. The *Century* is a perfect English gentleman, and Selkirk is his castle.

The indomitable Faye Selkirk, who has written two volumes of *Century Travellers*—*Travellers' Problems* and *Beyond Rupperts* (£4.95 each)—is in the *Century* series, taking us to her fortyleth year. Considering the revelations of the *Century* series, it is a wonder Ms Stark stopped at the Middle East. Her mother married her younger daughter off to the man she had loved for years, to see her bear the brunt of the one of whom she had loved for years, to see her bear the brunt of the one of whom she had loved for years, to see her bear the brunt of the one of whom she had loved for years.

The 'Spanish Maharani'—Anita Delgado—photographed in 1914: one of the illustrations to Charles Allen's *Lives of the Indian Princes* (Century £12.95, to be published on October 15).

Turn to the word

The New Collins Thesaurus. Edited by W T McLeod. Collins £7.95. 00 403308 7.

There is something extremely reassuring about Dr Roger's *Thesaurus* (treasure, word book, lexicon, store house, concordance, etc). Described by its originator, (author, deviser, generator, etc) as "a system of verbal classification", it appears to arrange all our untidy and imprecise words in a perfect order. In its six primary classes are tabulated words and phrases to express abstract relations, ideas relating to space and change of place, the intellect, the material world, volition and sentiment and moral powers. Within these classes, in numbered paragraphs, there are neatly grouped lists of nouns, verbs and adjectives. In a neighbouring column stand their relatives (cousins, kinsmen, etc). Like a flawlessly arranged library, Roger awaits its use in literary composition.

In practice, it can be an aggravating book. First, you must consult its mammoth index. You want an alternative for, say, the word "thesaurus" itself. You are told you will find it in paragraph 802 or, if the word is to imply "like", paragraph 803. "Book"

paragraph 593; "words" 562; or "store" 636. So to which do you turn first?

Rather than republish the Third International Edition of *Rogers*, Collins have opted for a thesaurus in dictionary form. In *The New Collins Thesaurus*, you simply turn to the word and immediately find a number of possibilities. However there are no antonyms and no related parts of speech (although separate lists are provided when a word can be more than one part of speech). Nor does it readily permit the location of a word from a vague idea and it is a little weak on phrases (although it includes some informal and slang words).

But, as its managing editor (and doyen of this paper's Lingo columnists) points out, language is too idiosyncratic (eccentric, quirky, etc.) to admit a precise scientific arrangement, and he has not been afraid to use his own judgment to produce a list of 16,000 headwords and potential alternatives that is pre-eminently practical. I shall add *McLeod* to the half-dozen reference books I keep within reach although my *Rogers* will not be discarded (abandoned, jettisoned, scrapped, thrown away, etc).

David Self

RESOURCES

Plant Tissue Culture Set 1

Contents: packet carrot seed, five sterile plastic pipettes, 5 x 15cm3 each seed culture media, callus initiation media, embryoid development media, plantlet media, 5 x 10cm3 of dispersing broth and instruction notes. Price £9.35

Plant Tissue Culture Set 2

(ref ZEA-200-U). Contents: packet tobacco seed, 5 x 15cm3 each of seed culture; callus initiation; root formation and shoot formation media. Price £8.15

Available from Griffin and George Ltd, Gerrard Biological Centre, Worthing Road, West Preston, West Sussex BN16 1AS.

Carrot Tissue Culture Kit

(Ref M802405/3)

Contents: 10 x 15ml vials callus growth medium; 2 x 100ml vials callus growth medium; 10 x 15ml vials regeneration medium; 1 x 100ml vials regeneration medium; 3 x 100ml sterile water; 10 sterile Petri dishes; instruction booklet Price £20.95. Available from Philip Harris Biological, Oldmixon, Weston-super-Mare, Avon BS24 9BJ.

Biology teachers do generally recognize the importance of biotechnology in the modern world and the need to introduce it into their teaching. The following kits for use at sixth-form level and above try to involve students in work directly relating to modern development. They are all concerned with plant tissue culture, but two of them show slightly different approaches to carrot tissue in particular.

The process of regenerating a complete carrot plant from an isolated piece of tissue involves several stages. First, isolating a part of the plant, called the explant. Second, allowing the explant to grow on a special culture medium when it produces a mass of unorganized cells, known as a callus.

Third, to transfer the callus to a different growth medium to induce the production of embryoids, groups of cells forming embryo-like bodies which finally can develop into complete carrot plants.

Both the callus and the growth media are susceptible to bacterial contamination, so aseptic techniques must be used throughout and a transfer chamber would prove extremely valuable in reducing spoilage.

The Philip Harris kit starts from a normal carrot. The Griffin and George kit from carrot seed. The whole carrot is an undamaged specimen about 20mm in diameter and 100mm long. It must be washed under the tap and scrubbed with a clean nailbrush. Then the outside must be sterilized in a measuring cylinder of 20 per cent sodium hypochlorite solution and left completely immersed for 30 minutes. But be warned not to follow the given instructions word for word or you will have hypochlorite solution all over the bench. The carrot floats, some method of keeping it submerged will be required.



After sterilization the carrot is transferred to a sterile Petri dish, and the ends cut off and discarded. The rest of the carrot is washed several times with sterile water and cut into sections about 3mm thick. These are then chopped into several segments about 7mm wide and transferred on to growth medium in a sterile vial.

The Griffin and George set involves a similar process, but because it starts from seeds there is an additional stage. The outside of the seeds must first be sterilized in the hypochlorite solution (or domestic bleach) and then transferred to a tube of culture medium to germinate. The transfer is not all that easy. A number of seeds will be needed. They should be left until the second pair of leaves have grown. Only then can the seedlings be removed, a length of hypocotyl cut off and placed on the surface of sterile callus growth medium.

With both methods callus should begin to grow after 14 days. After six weeks enough should have been produced for the tissue to be removed and a piece of live callus cut off and transferred to a vial of sterile regeneration medium. The tubes are incubated under suitable conditions and after a further period of some weeks carrot plants should begin to regenerate.

The Griffin and George *Plant Tissue Culture Set 2* uses tobacco instead of carrot. The procedure is the same up to the production of callus. Then pieces of callus are transferred either to a tube of shoot formation media or to one of root formation media and incubated under suitable conditions and the effects recorded after a month. These investigations do have drawbacks. Good sterile techniques must be used to save time and money. It takes three months or more to regenerate a plant from a carrot or seed, so students may lose interest. However, they are important investigations which demonstrate conclusively the ability of differentiated plant cells to regenerate a whole plant and show the

effect of the environment on plant development. They also have a direct application to today's rapid production of large clonal populations of plants of commercial value.

Starting with seeds has the disadvantage of an extra transfer process and therefore a greater chance of contamination. The carrot seeds germinated successfully and the hypocotyls were relatively easy to isolate and produced callus readily, but the tobacco under similar conditions was less

John Barker discovers some new kits for experimenting in the botany and biotechnology classes

easy to handle: the hypocotyls are much smaller, more delicate and therefore trickier to isolate and transfer. At present, though, they are still developing successfully.

The Philip Harris kit contains vials of sterile water—an unnecessary expense in view of the price difference between the two suppliers. In any event, more sterile water will probably be needed. The notes could also be strengthened by some mention of the practical applications of the process and some minor revisions of the instructions. (The Griffin notes were only a temporary version and obviously need expansion.)

As a major drawback to these kits is the length of time required to complete regeneration, both suppliers should consider marketing live callus. If this were used as a starting point, it would decrease the chances of contamination and reduce the time needed to obtain definite results.

Basic Techniques of Plant Tissue Culture, TC3 (Ref M 25080/3)

Set of 26, 35mm colour slides

Price £16.25

Also available in a full frame filmstrip (ref M 25084/9) Price £11

Available from Philip Harris Biological, Oldmixon, Weston-super-Mare, Avon BS24 9BJ.

The purpose of this set is "to present a general view of the techniques of plant cell, tissue and organ culture to inform and encourage experiments in this fascinating area of botany". The first objective is certainly achieved and I hope that time will show that the second is as well.

If you intend to carry out any investigations using, say, carrot tissue culture or leaf-cell protoplast, then this set provides admirable illustrative back-up material. Even if you are not undertaking any practical work in this area, some of the technique illustrated here should be discussed in any biology course at sixth-form level.

The set covers a wide range of different techniques, including the production of callus; the structure of embryoids (bodies produced in tissue culture which resemble normal sexual ly-produced embryos); regeneration of plantlets from culture; virus-free propagation; use of another culture; haploid plants and a series of four frames showing protoplast culture and a hybrid *petunia* produced by uniting protoplasts from two *petunia* species.

The standard of photography is good throughout. Some of the results illustrated are particularly striking, for example the difference in growth of a virus-free rhubarb plant compared with the normal infected plants. As usual in such a new area although the notes are reasonable in length more information is desirable, especially about the economic results of these techniques.

The process of osmosis can be demonstrated by adding various concentrations of sucrose solution to the mannitol solution. In strong mixtures the protoplasts visibly contract, in weaker ones they swell up and burst. A micrometer eyepiece is a useful accessory for monitoring this process.

notes

HISTORY OF SALTIRE
With the help of a grant from the Salt Foundation, Bradford Libraries have started producing information packs for use in the classroom.

A resource pack on the industrial village of Saltire offers junior pupils information on the mill, mills houses, and schools, illustrated with maps and copies of old photographs. A similar pack on Air Valley looks at transport in the area—canals, stage coaches, railways and trams.

HEART T-SHIRT
The heart is probably the most complex biological structure that children come across during an introductory biology course. This is partly because it is a complex three-dimensional structure, but also because its orientation is confusing.

This T-shirt goes a long way towards helping. All the teachers need to do is to wear it themselves or persuade a pupil to do so. The heart is drawn approximately life-size, in a sectional view, appropriately coloured blue for deoxygenated cells, red for oxygenated blood. Abbreviated

Leaf Protoplast Kit (Ref M92450/8)
Contents: 10, 90mm sterile plastic Petri dishes; 10 sterile plastic pipettes; Mannitol; Sucrose; Tween-20; enzyme; broad bean seeds; teaching notes. Price £11.95
Available from Philip Harris Biological Ltd, Oldmixon, Weston-super-Mare, Avon BS24 9BJ.

A relatively novel approach to producing new varieties of plants is to use cell protoplasts. This is another application of biotechnology to agriculture and horticulture which basically involves producing living cells from leaf tissue, without their cellulose cell wall. Such protoplasts can be grown in sterile conditions in culture media; their value comes from the fact that they can be used to regenerate very large numbers of plants.

In addition, protoplasts from different plants can be induced to fuse together and form hybrid cells. In some cases it has been possible to regenerate totally new hybrid plants from them. So the prospects for future development appear very promising. Some very interesting results have already been produced with potato clones (see J F Shepard *Scientific American* 246 (5) 112-121, 1982).

This kit does not, naturally, enable you to breed new plants, but it does open the students' eyes to the potential in leaf cell protoplasts and enable them to carry out simple investigations with the protoplasts.

At first sight the instructions are rather daunting, especially as the process is spread over more than 12 hours. However, taking it step by step, it is in practice much easier than I expected. Starting with some young broad-bean leaves, the outside must be sterilized. The lower epidermis removed. This is the trickiest part for two reasons: first it has to be done under sterile conditions, working on the leaf in a Petri dish under its lid and, if at all possible, in a transfer chamber; second, stripping away the lower epidermis is not easy. Watchmaker's forceps are the best instrument to use.

The leaves are then left overnight in a solution which is osmotically equivalent to the cell contents and contains enzymes to digest away the cell walls. The next day the protoplasts and cell debris are separated from the rest of the leaf tissue. The protoplasts are isolated by a series of centrifugations—the notes suggest using a hand centrifuge giving 50 x g. In fact I used the lowest speed on a school-type electric centrifuge and it worked effectively. The protoplasts are finally re-suspended in 10 per cent mannitol and examined under the microscope. The sight is quite fascinating as the protoplasts from spheres of cells packed with chloroplasts.

The process of osmosis can be demonstrated by adding various concentrations of sucrose solution to the mannitol solution. In strong mixtures the protoplasts visibly contract, in weaker ones they swell up and burst. A micrometer eyepiece is a useful accessory for monitoring this process.

Turtles and buggies

Sir—I may be old-fashioned, but isn't it a bit strange to have authors reviewing their own work? Anthony Ginn (TES, September 14) writes a purportedly objective comparison of the Valiant and Jessop floor turtles.

Mr Ginn is completely entitled to his opinions, but readers should have been told that he wrote the documentation for the Valiant.

In fact, there are important points to be made on both sides. For example, the Jessop turtle is completely "open", and its circuit diagrams and driver routines are open to enquirers; not so with Valiant, which goes so far as to

scrub the identifying marks off the backs of the chips on its Printed Circuit Board.

Second, unlike radio, infra-red communication can be interrupted. Jessops have long experience in using miniature radios in classrooms through the provision of deaf aids. It is not at all clear that remote control has "made good turtles obsolete" as Mr Ginn claims. Several special education teachers at the conference of the British Logo Users Group made the point that children found the physical link between computer and turtle an essential aid to understanding the

causal relationship between their actions and the turtle's movements.

Third, the Valiant Turtle has no feedback loop, which tells the computer where the turtle is at any one time. If you removed the turtle, the computer program would continue to run undisturbed. This may seem to be mere pedantry, but it has important implications for future extensions to the turtle's capabilities. It also makes the Valiant turtle unsuitable for teaching the principles of robotic control.

I should add that I am not an unbiased observer. I met John Jessop earlier this year when writing an article about the two turtles. I have since been associated with him on a number of projects.

In the small and ingenuous world of educational computing, where success or failure may depend on a favourable review in *The TES*, it is important to be careful about these matters.

CHRISTOPHER ROPER
Christopher Roper Communications and Research
16 Long Street
Belton
Leicestershire
The authorship of the manual for the Valiant Turtle was unknown to the TES.

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Victoria Newman

Compact disc, the five-inch gramophone record that is tracked by a laser just like videodisc was launched eighteen months ago. Initially it was aimed at the hi fi buff, and, although the price of players has come down, sometimes by 50 per cent CD is still arousing most interest in hi fi circles. Behind the scenes, however, there is a buzz of activity which virtually guarantees that CD will eventually become the universal carrier medium, not just for high quality sound, but text, graphics and computer data.

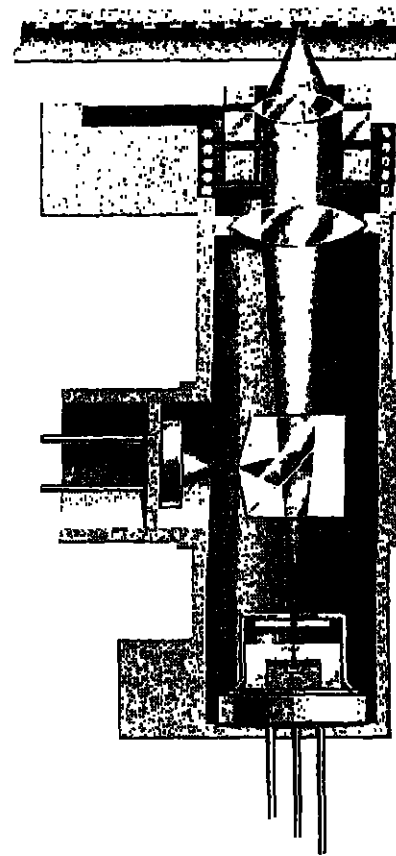
The BBC, and IBA, radio stations are already using CD players and their libraries are building up a collection of digital discs. Widespread public acceptance, however is slow: emphasis on hi fi quality has scared off those who could well benefit from the use of CD, simply because of its large record collection feel threatened, failing to understand that for many years to come CD and conventional vinyl LP collections will co-exist.

The technology of compact disc was derived by Philips from its Laservision videodisc. The key factor is storage density. A finely focussed laser beam can pick up information from a microscopically tiny spiral of pits pressed into the surface of a plastic disc coated with reflective material. The pit spiral has a pitch of only 1.6 microns, which is around one-thirtieth the pitch of an LP record groove or a similar fraction of the width of a human hair.

The surface area of a 12-inch videodisc will store around one hour of colour TV pictures and sound, recorded as an analogue waveform in the pitted spiral. If the pits convey digital code, and there is no attempt to record moving colour TV pictures, the disc size can be reduced to five inches for an hour of stereo hi fi. This is the CD format.

When the Dutch company Philips first proposed CD, in the late 70s, the plan was to use 14 bit digital words to convey the stereo sound. Some audio engineers argued that 14 bit words would not be sufficiently accurate for genuine hi fi. Philips struck a deal with Sony in Japan, modified the coding and standardized on 16 bit words. Japanese electronics giant Matsushita pledged allegiance to the format and subsequently every other major electronics firm fell into line.

Although the case is not yet proven,



Laser reading

Barry Fox looks at some of the finer details of the compact disc

all the signs are that the 16 bit standard is perfectly adequate for high fidelity reproduction and the subtle defects heard in the system by some golden-eared critics are simply teething problems. Nevertheless, the sound is not perfect and compact discs will only last for ever if they are treated with care. That said, a laser-read digital disc is far more robust than a vinyl LP. It is possible, quite literally, to drill a small hole through a CD and still play it without any audible defect. The digital code has redundant bits which fill in the gaps. These are of course not there to correct for holes drilled through the disc, but to compensate for bits of information lost through faults at the pressing stage or by scratches on the surface. However very occasionally, a CD player will refuse to play a solid disc, usually all that is necessary is to

wipe the disc on a piece of clean cloth. In general CDs will survive rough treatment that would make a vinyl LP micro-groove record unusable. This is why broadcasters like the new medium so much.

Sales of compact discs and players around the world have been slow. In the nine months after the system was launched in Britain, in March 1983, less than 15,000 were sold into UK homes. That figure included the inevitable first flush of sales that greets any new and exotic consumer product. The estimate for 1984 sales into British homes is around 25,000. Total world player population by the end of 1984 will be around one million. This is lower than the electronics industry hoped. Hence the cut in price, in the case of some of the least popular players to around £200, compared to

the original £500 asking price. The main block to CD player sales, however, is the high price of discs. In Britain this is £10 or more and is due largely to the heavy investment made by the relatively small number of factories around the world which have installed equipment to press CDs. The discs are also much slower to make. The air in CD factories must be purified to the level of a hospital operating theatre and the process of injection moulding the plastic disc and then coating it in a vacuum with aluminium vapour is comparable to the production of micro chips.

The only pressing plant so far operational in Europe is the Polygram factory in Hanover and investment there is £25 million. The first British plant, Nimbus in Wales, is due to start operations any time now. Japan is the other main source of discs. So far demand has outstripped supply which has allowed the manufacturers to keep the price high and so recoup investment. But by the end of this year worldwide production should be around fifty million discs per annum which, with only one million players sold, suggests that a disc glut is due. When this happens, CD prices will fall.

The hardware manufacturers, making the players, are already planning new generations of equipment. Broadcasters need rugged players, which can be computer-programmed to select the start and end points of musical tracks with split second precision. Already the BBC is evaluating equipment of this type. The Japanese have built compact disc auto change units, which store over 50 discs and give users the chance to programme literally days worth of material.

Philips and Sony recently demonstrated, at the Düsseldorf Hi Fi and Video Show, CD players in the dashboard of a car. But the cars were stationary. So far no one has been allowed a test drive. There are two reasons for this. CD players still get very hot and in a car the temperature rises to such a level that the laser life is drastically shortened. Also the players servo controls may not yet be able to track a disc when the car is driven over a bumpy road.

Similar snags have held up the launch of another CD development, a portable unit which plays miniature discs. The standard format allows the use of miniature discs - a couple of

inches in diameter - because the laser always starts tracking from the edge of the disc, not from the outside. Size of disc of any size can be tracked from same starting point. So far heat problems, and mechanical stability, have made portable prototypes impractical. The format does however allow a servo control technology which will keep the laser tracking under a force several Gs, so portable CD will come or later become a reality.

In November Philips makes a decision which will be of special importance to schools and universities. The digital code on a disc need not come one hour of stereo hi fi. Instead it can be modified to let the disc record over 20 hours of lower quality audio. This means that it will one day be possible to use a single five inch compact disc to store a series of talking books for the blind, or an encyclopedia of spoken information or a pronunciation guide for language tuition.

The disc digital code can also be modified to display text and graphics like teletext or videotext, on the screen of a television set while the disc is reproducing sound through loud speakers. Already several firms, including Matsushita in Japan, have shown a test disc with the lyrics of song and colourful designs appearing on screen as the music plays. Another Japanese company, Denon, has developed a technique for storing computer programmes on a compact disc with optional text and graphics. Capacity is astounding: 600 megabytes of computer data on a single CD, compared to several hundred kilobytes on a floppy disc.

It is even possible to mix music and data on a single disc, so that a computer connected to the CD player loads a program off disc and then uses it to perform complex tasks with music plays from the rest of the disc. Again there is the option of graphics and text on a tv screen. The decision this November, is to set a standard for CD-ROM, the name used to denote the new technology of mixing sound, data, text and graphics on a single disc. The standard is essential, because of future there will be a hierarchy of CD players with all discs compatible with all players, but sound-only players ignoring computer data and computer players ignoring sound.



Word stoppers

Your Adventure
Acorn BBC Model B, tape or disk
Price £7.95
Language Development Pack
Acorn BBC Model B, tape or disk
Price £9.50
Developed by MEP and available from Learning and Training Systems Ltd, Haydon House, Alcester Road, Studley, Warwickshire B80 7AP

Your Adventure is aimed at 7 to 14-year-olds. It is a basic adventure game in which the child embarks on a journey and attempts to reach a treasure cave. Two games are provided, together with the facility to create your own adventure. The problems test language skills and if the child solves a problem he or she progresses and increases their treasure. Clues are available (usually) but if you get truly stuck you can buy your way past the obstacle with treasure from the cave. Judge for yourself whether or not the clues are always helpful.

Problem: "Add a c to the branch of a tree to get to the top of the hill."
Clue: "Try again you've another chance to lumber up for the wizards' dance."

Failure to solve the problem does not result in the answer eventually being given, which is not only frustrating but a pity if you are actually expecting children to learn anything. There are clear and sensible notes accompanying the disk which do actually tell you what you need to know. My verdict on the program is "not bad" but it doesn't compare with *Granny's Garden*, for example, although the *Create Your Own Adventure* facility offers some flexibility and fun.

The **Language Development Pack** is aimed at 7 to 15-year-olds. It tests a range of language skills, for example vocabulary extension, creative writing, alternative forms of expression. There are three separate programs in the pack: *Sentence Corrector*, *Word Stopper* and *Say That Again*. *Sentence Corrector* presents a sentence containing one incorrect word which the child has to identify and substitute an alternative. For example: "The people were jumping in the lift." I tried "getting" and got the response: "Do you mean standing? If you do type the word again otherwise press return." I did mean "getting" so I tried again with

this result: "Getting - that's not a word I know. Do you want to try another word again, otherwise press return." I learned fast from heffy prompts I tried "standing". Guess what? I was right. It's easy to play games like that but actually the important thing about the program is that you can review the child's attempts, edit the alternative words before saving them if desired as well as specifying your own sentences and words.

Word Stopper is all about "creative writing". The child types in his/her story and the program prompts the child to use alternatives when words previously specified are used. Up to 10 words may be "stopped" and five alternatives given. The program again provides a report for the teacher and also allows a printed copy to be made.

If you've got children who, for example, over-use the word "nice" despite constant reminders (and who hasn't?) then try them with this program. The first time they type "nice" it will disappear, the noise will make them jump (well, it did me!) and the following message will appear: "Please do not use nice. Try another word. Retype, or press Return to use same word, press spacebar for some suggestions."

In other words they are not prevented from using the stopped words but they are encouraged to think of alternatives. Useful indeed - as long as you don't mind the odd interruption to creative flow.

Say That Again presents a sentence which the child has to read and then retype using different words but retaining the meaning. As before, it is possible to get a report at the end and also to specify your own sentences. The program doesn't check meaning from example but it will tell you to try again if you use more than three of the original words. My rendering of "I like spring mornings most of all" as "Spring mornings rule OK?" was happily accepted but to be fair such a rendering would doubtless provide much fruitful pupil-teacher discussion when the responses were reviewed!

Less value than *Word Stopper*, but the complete pack could provide the teacher who is prepared to gear the programs to individuals with a useful resource for this kind of work.

Wendy Body

The leveller

Telebook
For BBC Model B Computer
Disk: £17.65 plus VAT
Cassette: £15 plus VAT
Amation Educational Software, Linden Lea, Rock Park, Barnstable, Devon.

Telebook aims to free children's writing from what Tim Johns describes in the handbook as "our clerkish, classical educational traditions", which "often seem to value spelling, handwriting and presentation before content". It operates rather like a limited wordprocessor with added graphics, although unfortunately these cannot easily be printed. However, if *Telebook* is in computing terms at best no advance on its main competitor, *Edifas* (reviewed by Jacquetta Megarry, TES, April 6), it is much more closely related to the priorities of teachers. While *Edifas* presents itself as a "teletext emulator", modelled on Ceefax and Prestel, *Telebook* provides children and teachers with an easier way into

Pat Fox, from Preston Primary School, Torquay, describes it as a "great leveller", and for once this really does mean levelling up. "We are all," she says, "biased by outward appearances, and children, in particular, are impressed by a tidy page devoid of spelling mistakes. *Telebook* allowed the content to shine through unimpeded by smudges, mistakes, bad

handwriting, faulty spelling etc. and enhanced by bright colours, ordered stars and flashing lights".

The program is based on the creation of "books" of up to 15 pages. Each page can contain up to 760 characters (approximately 130 words) and can easily be laid out to include large and standard type-settings, coloured letters and/or background and graphics. Up to eight "books" may be stored on a standard 40-track disk, and they may be viewed, edited, combined, deleted or copied at anytime. It takes four minutes to load the program on to a cassette, and up to two-and-a-half minutes to load a whole book.

The instructions are generally very clear, and include an entertaining demonstration disk which will make the program particularly useful to teachers who are not at home with computers. Such accessibility helps to compensate for some of the technical limitations. *Telebook* cannot match the wordprocessing capacity of either *Edifas* or *Wordwise*, but it does offer a format which is suited to a wide range of work in school and particularly to the scale of children's writing, for example, class magazines, poetry anthologies, noticeboards and records. It could be used as basis for written work in a variety of subjects including science.

Wordprocessors, moreover, do not normally offer graphics, while *Telebook* provides a simple guide which will enable children and

teachers to plan their own. Text can be printed at the touch of a key, but pages which include graphics can only be printed by "dumping", a procedure which might have been described in more detail in the manual. It is, however, a simple operation and can also be used to print *Edifas* pages. Incidentally, the piece of cardboard designed to protect the "break" key should be replaced by a bit of plastic.

For large-scale projects it might be better to have the 80-page capacity offered by *Edifas*, but for the classroom, particularly for junior and younger secondary school pupils, *Telebook*'s flexibility and ease of use make it a very good buy indeed.

The possibility of professional presentation invariably makes children much more willing to discuss and revise their written work, and allows the teacher to offer comments and criticism in a spirit of collaboration rather than judgement.

This is especially valuable in work with less academic pupils as it breaks the cycle of poor work and frustration which destroys confidence and caps morale for both them and their teachers. *Telebook* is a powerful argument for remedial departments to be equipped with their own computers, and it might be a good strategy for remedial teachers to buy the program first and fight for computer time afterwards. Their work will be transformed.

John Bald

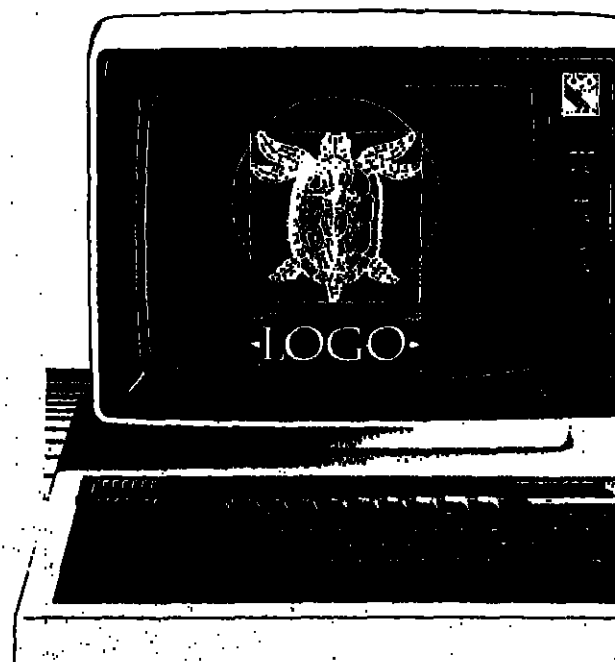
A full LOGO for the BBC model "B" from Logotron.

LOGO is a computer programming language, which appeals equally to children in primary school or to computer scientists at the Massachusetts Institute of Technology. Using LOGO, you unconsciously absorb advanced mathematical ideas and fundamental principles of computer programming. LOGO has been available on microcomputers only since 1982. Only this year has it been made available on British home computers like the Sinclair Spectrum and the BBC Micro.

LEONARDO WOULD HAVE LOVED IT!

Leonardo da Vinci would have loved it because LOGO gives full rein to a child's creative imagination, using visual images to convey profound ideas. LOGO could do for computers what perspective did for pictures, bring them alive.

Logotron's LOGO for the BBC "B" was written by LCSI/SOLI, the software house responsible for LOGO implementations for Atari, Apple, IBM, Sinclair, Colec, and NEC. It's the closest there is to an international LOGO standard, with turtle graphics and full list processing. The software is contained on a single 16k ROM, written in 6502 machine code, fully compatible with the 6502 second processor unit and Econet. Facilities are provided to drive floor turtles, create and use data files, and access routines written in machine language. Full access is provided to the BBC micro's operating system. An optional sprite board, also provided by Logotron, can be used to handle video output and provides more than 30 programmable sprites, allowing true animation.



Please send me further information concerning Logotron's LOGO for the BBC Model "B".

NAME

ADDRESS

☐ Educational Establishment; ☐ Home user; ☐ Dealer; ☐ Distributor

*Attach your company stamp here

If you want to know more about LOGO, send for a descriptive leaflet and price list.
To: Logotron, Dept. TES1, 5 Granby Street, Loughborough, Leicestershire LE11 3DU, England.

LOGOTRON

Geography 16-19 Project Student Booklets

Energy and the Environment; Coastal Management; Squatter Settlement in the Third World; and Agricultural Land Use and Landscape Change. Price £1.25 each (excluding postage). Longman Group Limited, Resources Unit, 33-35 Tanner Row, York, Yorkshire YO1 1JP.

Most geography teachers will be aware of the Schools Council Geography 1976 and has since designed and implemented a major curriculum revision, one of the products of which is a new A-level syllabus now available through the GCE boards. The distinctive 16-19 curriculum is characterized by an innovative content and by the extensive use of an enquiry-based approach to learning.

The curriculum modules which lie behind the recently-published booklets cover a series of themes or issues, many of which lie at the interface between human and physical geography. Systematic training and technique mastery are then viewed as being acquired indirectly as the student works towards the targets set by the module.

All of these attributes are apparent in the first four of the 20 or so student booklets which are scheduled for publication in support of the project; but which (it should be stressed) could profitably be used in their own right as topic books. The style is lively, with information often taking second place to impact. Booklets open with a double-page spread of motivational material and are heavily sectionalized throughout. Photographs, maps, diagrams, data tables and newspaper cuttings abound, and the student is propelled through this set of opportunities by a series of questions and tasks.

There is only limited space in the 28-40 pages used by these booklets to provide systematic teaching, so most of the considerable amount of information provided offers background on the case studies being developed. It is important, therefore, to appreciate

Geographical harvest

M J Clark on a selection of materials for the classroom

that the booklets on their own would yield only a partial introduction to the study of geography, and that they would normally need to be supported by reference to more conventional texts.

There is little doubt that these booklets will succeed in enthusing and enlightening many geography students. Properly used, they will also be educational - though this latter attribute rests heavily on the setting in which they are employed. At their best, the booklets are cogent and highly effective contexts for involving students in the process of "geographical enquiry" (a much-used but little-defined phrase). On the other hand, they are so concerned with case study that they leave the difficult responsibilities for generalization, comparison and qualification, very much on the shoulders of the teacher (with little help in the extremely brief teacher's notes), and significantly over-estimate the extent to which "issues" as such dominate the role of the geographer.

Like the project from which they have emerged, the booklets are full of potential - but to be used with just a tiny measure of caution.

Scandinavian Northlands: Challenge and Opportunity. By R Knowles. £2.50 plus VAT. Common Ground Filmitips, Longman Group Limited, Longman House, Harlow, Essex CM20 2JE.

Although many human geographers have spent much of the last 20 years trying to free their subject from the constraints of the physical environment, there are some regions where such an approach seems doomed to failure. Since one such area is the Arctic, it is no surprise to find that a filmstrip dealing with the Scandinavian Northlands is dominated by environmental

typeface and paper) but even limitations despite the fact that the major challenges and opportunities are essentially social and economic.

Yet it should be stressed that this is not a crude deterministic presentation. Indeed, the author offers a polished and perceptive viewpoint which neatly blends the familiar physical characteristics of the far north with a sympathetic but realistic assessment of the potential of its peoples. In this context, the comprehensive handbook goes much further than is usually the case with audio-visual support materials to provide a substantial commentary rather than just a series of descriptive notes.

The 36 half-frame pictures give a comprehensive introduction to the wide range of environments that characterize the northern parts of Norway, Sweden and Finland - though the technical quality of reproduction is not always impressive. A possible drawback, however, is the lack of guidance regarding the order of presentation. The indication of the underlying logic is left to the viewer's left to designate his own sections and deduce his own relationship between pictures. On this basis it appears that the three

major themes are environment, access and economic opportunity - each of which receives extensive treatment.

There is, perhaps, some tendency to overstate the case. The environment is certainly harsher and the access poorer than in the south, but often the examples used reflect altitude as much as latitude, and if the comparison is made with other polar areas on the same latitude, then the most astonishing characteristics of Arctic Scandinavia are the mildness of its climate and the high level of development of its communications network. Nevertheless, there is ample exemplification here to allow teachers to design their own perspective on the north, and to demonstrate that the Arctic is in reality very different from the stereotype of a frozen wasteland.

Geoffie - Information service for geography teacher. Annual subscription (three issues) £10 (inc. postage). Mary Glasgow Publication Ltd, 140 Kensington Church Street, London W8 4BN.

A previous review (The TES May 1983) of *Geoffie* gave this service a general welcome qualified by one or two minor reservations mainly relating to the balance of the content. With its second series now complete, *Geoffie* is looking leaner (with slightly lighter



bits

INTER-ACTION

Inter-Action, the London-based charity, has set up a computer unit to train teachers, parents and voluntary sector workers.

The unit will offer familiarization courses for those with no previous experience and introductory courses in wordprocessing, computer accounting, database management and financial modelling. Michael Collier Bradley, manager of the new unit, said the courses had been organized because teachers and parents could not afford the high fees demanded by most training organizations.

Inter-Action will base the courses on 10 Commodore 64 microcomputers and will run classes throughout the week, including Saturdays. For the past three years Inter-Action has been running computer camps for school children.

Further information from Inter-Action, 15 Wilkin Street, London NW5 3NX.

BEEB ART

Griffin and George now supply three new software titles for the BBC Model B. "Beeb Art" enables the user to draw lines or shapes directly on to the screen using either joystick or keys. The program uses full colour graphics and designs can be saved on cassette.

"Music Processor" is said to exploit fully the BBC Micro's musical ability and to have over 30 functions. "The Generators" allows the user to manipulate teletext graphics and to create, for example, a title page for a program.

Griffin and George, 285 Ealing Road, Alperton, Wembley, Middlesex.

CATALOGUE

The company Five to Twelve of Seaford, Sussex, known for their slides and filmstrips, have produced a catalogue of computer software for primary and middle schools. The new catalogue contains over 100 programs plus details of software from companies including Chalksoft, ASK, Fernleaf, 4Maton, and Tressel Publications.

Requests for catalogues should be made to Five to Twelve, 2 Church Street, Seaford, East Sussex, BN25 1HD.



Computer applications

Learn About Computers

Teachers' guide and cassette of programs for BBC Micro and RML480Z. Price £10 + VAT; textbook £2.75. Heinemann Educational Books.

When Computer Studies was first introduced to the secondary school curriculum, computing was presented as an abstract body of knowledge closely akin to mathematics. Over the years, however, it was realized that the various applications of computers are of paramount importance to understanding what they can do.

MacFavish and Ball have come up with the splendid first stab at computer appreciation for 9 to 13-year-olds, but the published result needs more technical editing. There is a pupil's book and a teacher's book with answers, photocopying master sheets and a cassette of software. The content is well integrated and does not emphasize the applications of computing nearly enough.

Part one introduces the various components of a microcomputer system that children are likely to have in their classroom and then goes on to discuss the relationship between big computers and little ones, and the advantages of connecting the two. This is the weakest section of the whole

book: wordprocessing, for example, certainly could have been given more than the single lesson allowed. But despite this over-emphasis, many aspects of the subject matter are treated adequately in this section; silicon chips are discussed without the vital fact that computers based on them have a low power consumption. It was also surprising to learn that one kind of chip in a microcomputer is called a ROM and the other a RAM.

Part two focuses on the computer's ability to draw pictures, and covers high and low resolution graphics and animation, while part three introduces the input-processor-output model. Again I have technical quibbles with otherwise attractively presented material.

Lesson six of part three is called "Storing Information" which no computer can do. Computers store data. Thus a computer might store the sequence 010479, and only when a program reads this can information be produced from it. For example, if the program expects a date, then 010479 may be April 1, 1979. If the program is expecting bust, waist and hip measurements in inches, something has gone wrong.

Part four is much better and concerns applications of computers. It could well be used in conjunction with

Thames Television's *Living in the future series*. Electricity and gas billing systems, databases, electronic money, wordprocessing and computer-aided design and production systems are covered.

The final part is an introduction to programming via turtle graphics (a turtle with 90 degree turns only) in a version supplied with the material and no *Turtle*, which enables the programming of tessellations starting the selected basic shapes.

Turtle is a wonderful idea and needs to be worked up into the format program it could be and moved away into the mathematics curriculum where it would be more relevant. What was needed here was a very simple wordprocessing system or another one down (but interactive) version of one of the applications systems.

Children's Television Workshop's the USA have produced a package aimed at a similar or younger age range. The American product was computers as a tool, its programs are crash proofed and teacher modifiable. In all these respects the Heinemann package is quite simply underdeveloped. My only hope is that *Turtle* will see the light of day elsewhere.

Michael Thomas

Capital scheme

The Capital Region of the Microelectronics in Education Programme has set up its own publishing arm, Capital Media, to publish software for schools both in the region and outside.

The region already has a range of about 150 programs in different stages of development, including a disk of *Mathematical Games and Activities* for junior schools and *Smile*, programmes to complement the ILEA secondary mathematics project, which is made up almost entirely of individualized learning materials. In the pipeline are a batch of primary programs from the London Borough of Bromley and software for computer aided design.

The programs will be sold on disk at prices which are geared to cover costs plus a little more to be ploughed back

into the scheme. Prices will range from £6 to £10 for a disk containing between six and 10 programs. This is a fraction of the price of commercially produced software.

Mike Doran, Director of MEP Capital Region, said that the unit hoped to produce software which the commercial publishers could not afford to produce because the market was not large enough. They were particularly interested, he said, in "curriculum specific programs", the kind of useful program mainly used in secondary education to perform a specific task within one subject.

More information can be obtained from Capital Region Information Centre, John Ruskin Street, London SE5 0PQ.

Carolyn O'Grady



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Measuring Price Elasticity: ELASCO

Competition, Mergers and Control of Monopoly: MERGER. Available on RML 380Z disk, RML 380Z and 480Z cassette, BBC micro-cassette and disk, Apple II disk, Commodore PET cassette and disk. £14.50 each plus VAT. Longman Micro Software, 1984.

ELASCO is the software title for a series of case studies designed to help students understand how to calculate elasticity of demand. The unit comprises eight exercises in which the student is cast as a concert hall manager who has to fix the ticket prices for a series of events that have already been booked. To simplify the exercise, only one price may be charged throughout the hall, thus immediately distancing the simulation from reality. The linear demand function assumes that 1,750 seats will be demanded at a zero price.

The program starts by offering the user a choice between two alternative elasticity coefficient formulae, and whichever is selected is then used throughout the calculations. The student then selects one of eight events for which to decide a pricing policy, for example a pantomime, a talent contest, a brass band recital, and a wrestling bout. It is assumed that all the costs of putting on one evening's event are fixed, so that the objective is to maximize revenue.

The user may make up to 11 decisions to arrive at the correct revenue maximizing price, though anyone with a knowledge of the properties of

demand curves only needs three observations to obtain the correct decision, having deduced that the demand function is linear. The pricing decision for this month and the previous month are displayed, and a graph charts the demand function and colour-blocks the total revenue gained. Students have to work out the elasticity coefficient from the data provided, and if they give the wrong answer, the program forces them to plot through the calculation step by step. If they make three wrong attempts, it gives up and provides the correct answer! Then one decides whether to increase or reduce the price for the next round.

The general rule is of course to reduce price if elasticity of demand is greater than one and increase price if it is less than one. If the user requests that price should go up, when it should go down, or vice versa, "Incorrect" flashes up on the screen, so one just suggests the opposite, but no explanation is provided of why the first decision is wrong. Also, it is stated that the price must be in pounds, but in fact prices like £1.50 are permitted.

I tried a couple of the case studies. The Arthropods are a pop group, and my decisions gave me plenty of useful practice at calculating elasticity coefficients. The program is keen that one does not forget that price elasticity is always negative, and a calculator is recommended. After an initial price of £1 per ticket, I changed to £4 for the second decision. Having worked out

the elasticity coefficient correctly at 0.17 (inelastic demand), I responded to the question: Should price go up or down? - Up! I was initially surprised when the program told me that this decision was incorrect, until I remembered that the elasticity measurement is misleading, especially with such large price changes. Again I felt that the exercise would hardly be reinforcing taught rules in such circumstances. Next, I selected a price of

David Whitehead reviews three programs for economics students

£3.50, and elasticity was 1.34, so I suggested reducing the price further, only to be told: "Maximum revenue reached": another confusion caused by the use of arc elasticity.

Like some other units in the Longman series, the accompanying booklet suffers from theoretical errors and serious proof-reading mistakes.

The program for *Competition, Mergers and Control of Monopoly* (called MERGER) is altogether more complicated than ELASCO. It is a business game in which students make price and output decisions for firms in an oligopolistic market. As the simulation proceeds, the program permits mergers, takeovers, bankruptcies and informal cartels. The market (for what product?) may include up to 10 firms,

and the teacher may decide in advance whether the market will be characterized by firms of equal or randomly unequal size, or where one firm is dominant. The user may elect to include the possibility of economies of scale. Further, the market demand for the unknown product may be growing, static or shrinking. Another unusual aspect of the game is that, when certain market situations develop, the Monopolies Commission may be instructed to conduct a public interest hearing. This permits the social assessment of business behaviour. An objective of the program is to help students to appreciate the importance of interdependence in decision-making, when uncertainty about competitors' actions is unavoidable (except with restrictive agreements!). As the game proceeds, successful firms may invest in extra plants, or take over other firms. Another aim is to give students insight into the process by which an industry moves towards an equilibrium position, with each firm earning just normal profits and all plants utilized at optimum capacity.

I ran this program with the RML 380Z disk supplied. Longman advise the user to make a back-up copy. Unlike the BBC disk, this disk compelled me to make a copy before accessing the data: good news for software manufacturers! The loading instructions specify use of a c/p/m 1.4 disk, but this has now been superseded by the c/p/m 2.2.

I started by running the simulation with only one firm in the market. Having referred my own scandalously exploitative pricing behaviour to the Monopolies Commission, it imposed a maximum price. I then allowed three new firms to enter the market, but the program insisted that firm one adhere to its maximum price throughout this phase. The program states "charge a price below 25" when it means "charge a price of 25 or less".

The oligopolistic industry is assumed to be producing a homogeneous product, so that when I had four firms charging prices of 23, 24, 25 and 25, 99 per cent of the sales went to the firm charging 23. While this follows from the assumptions, students would need to be reminded that oligopolistic industries are likely normally to have firms producing differentiated products. When all four firms charged the same price, the market was divided equally between them - again unlikely in oligopoly.

After each decision round, each firm is told how much it has sold, how much stock is left, and how much profit has been gained, together with the reaction on its share price. Unfortunately, all other firms have access to this information, unless the screen is viewed only by the teacher, which would be a pity. The accompanying booklet and student leaflets have been carefully proof-read, and other more serious slips obscure. Figure three shows two cost curves, though it is very unclear what they are meant to represent. In the comments on questions it says "prices should be set below AVC": no doubt all users will spot the missing "not".

NEW SOFTWARE FROM BBC PUBLICATIONS



Science Topics: Waves

These simulation programs provide a visual presentation of wave propagation, reflection, refraction, interference and diffraction. Students can set up waves, erect reflectors and barriers, adjust angles and wavelengths, and observe the results on the screen. Disc £17.20

Advanced Studies: Geography

These programs give students the opportunity to act out the roles of planners and administrators. By manipulating geographical data they must find strategies to serve the needs of today's city dwellers. The models include solving traffic problems, controlling water supply and mapping out shopping needs. Cassette for Model B £12.65 Disc for RML 380 Z £13.80

Science Topics: Relationships

A sophisticated simulation exercise in biology, developed by Chelsea College in conjunction with the BBC TV series. The player takes the part of a medical control officer striving to combat an epidemic of malaria in an African village. Disc £17.20

Drawstick

A friendly and versatile program capable of producing elaborate high resolution pictures and patterns in four colours. It enables children aged from eight upwards to create pictures, charts, maps and diagrams, and is sufficiently sophisticated for use as a Computer Aided Design tool. It includes a useful Save routine. Cassette £9.95



UNISIM

UNISIM, a business simulation game developed by our own management consultants with the help of teachers, has been written for use on the BBC-B microcomputer.

The game is intended for between three and five teams of fifth and sixth form students of any discipline to give them experience of what is involved in managing a business and the importance of decision-making. Decisions have to be made concerning production, marketing, selling, finance and planning. The overall objective is to hold the dominant position in the market judged by percentage share of the market and by profit.

This interactive game can be played in a simple form but as tutors and students become more experienced various options can be introduced. The game can be run continuously or over several sessions with intervals between.

UNISIM is available at a cost of £35.00 per game. Each UNISIM package consists of: One Main Disk, One Archive Disk, One Tutor's Manual, 20 Student's Manuals.

To order UNISIM please send cheques/postal orders made payable to UNILEVER PLC to:

Unilever Education Section, PO Box 68, Unilever House, London EC4P 4BQ.



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For further information please write to The Academic Marketing Department, Penguin Books Ltd., 606 Kings Road, London SW10 0UH

MEDIA

briefings

radio & t v

For schools

MUSIC TIME

(Monday 10.15, BBC2)

This new unit explores the musical elements of everyday sounds. "Traffic" invites seven to nine-year-olds to listen to the high and low tones of vehicles.

BRITISH SOCIAL HISTORY

(Monday 10.38, BBC2)

"The Poor Weaver" is a play for 14 to 16-year-olds, showing the difficulties faced by Glasgow families during the Industrial Revolution.

ACTION-TÉLÉ

(Monday 11.38, ITV)

First-year French pupils visit a café-restaurant. Material for graded tests is included.

VOIX DE FRANCE

(Monday-Friday 00.30, VHF4)

This term's programmes are intended for O-level students and feature items on "Les Français et les animaux", "Avoir 16 ans" and a new radiovision "La Bretagne, côte et campagne".

ENGLISH 11-13

(Tuesday 11.17, BBC2)

A series to increase pupils' enjoyment in personal writing.

MATHSCORE TWO

(Tuesday 9.48, BBC2)

Ten and eleven-year-olds of average ability, take a close look at fractions and percentages in "Half and Half".

STOP, LOOK, LISTEN

(Tuesday 11.49, ITV)

"Librarian" is a new programme in this unit exploring people's jobs. Seven to nine-year-olds see children visiting a local library.

GEOGRAPHY TODAY

(Wednesday 10.48, ITV)

A-level students begin a unit on the way coastlines are affected by the sea.

WAVELENGTH

(Wednesday 11.30, VHF4)

Andy Paebles presents "Computers, Technology, Engineering".

SOUNDS, WORDS AND MOVEMENTS

(Friday 14.25, VHF4)

Designed for 7 to 11-year-olds who have special educational needs, this series is to stimulate all the senses and encourage participation.

Continuing education

A VOUS LA FRANCE

(Sun 10.55, Sat, BBC1)

(Sun 17.00, Wed 23.00, VHF4)
(See review.)

ANCIENT LIVES

(Sunday 20.15, C4)

John Romer visits Dr El Medina to throw light on life in Ancient Egypt.

CLAIRE RAYNER'S CASEBOOK III

(Tuesday 22.55, BBC1)

This new series features case histories of real personal problems.

4 Television Programme Recording

* Titles Available for Week Commencing Sunday 7 October 1984.

Monday October 8
18.00 Well Being: Tearing Off The Labels
See code B

Wednesday October 10
20.30 Diverse Reports: See code B
Thursday October 11
22.55 Blood of the British:
Roman and Celtic Britain: See code B

Local studies

SCHOOLS TELEVISION

Going Places
ITV, Tuesday 10.04-10.19am/Thursday 11.19-11.34am.

There was considerable discussion at the preview of *Going Places* as to what geography really was. In the primary school at least. Had we all read the introductory pages of the excellent, eminently practical Teacher's Notes, however, we could have saved our breath for, together with the first couple of programmes, they put everything in context.

To the surprise of one or two of my colleagues, *Going Places* is not about

foreign countries and their capital cities (if it was, Central Television would presumably have called it *Naming Places*). Nor does the series tell us the exact length of the Amazon, the number of people who live in Brussels or even the height of the Matterhorn.

Instead, it contents itself with providing far more useful introductory material for the kind of geography curriculum studies topic work undertaken in many primary schools.

One of its main concerns is to introduce what is apparently (though fortunately not on the screen) called "geography" - the map-work which many junior-age children find difficult to grasp. Hence, in the first programme there was an animated fly-on-the-ceiling view of a classroom which acted as links to the animated plans that cropped up later. In following programmes this idea is taken further.

Central TV cameramen have been

clearly fulfilled a need by bringing language learning to people who would not otherwise have entertained the idea.

Purists might have shuddered at some of the exchanges. "Nous avons poulet basquaise," said the waiter. "What's that?" quipped Joe Brown. "Chicken in a basket?" *Excuse my French* was not designed to teach the language, but to motivate or recruit, and as such it worked very well.

The core of the trilogy is the 15-part radio and television series called *A vous la France*.

The first BBC language programme, broadcast some 60 years ago, was justified as enabling listeners "to avoid the necessity of having to visit the country". The aims of *A vous la France* are, happily, totally different. Great care has been taken to capture the flavour of the "real" France and not just the France seen by the tourist.

Factories, laboratories, offices are as much part of the scenario as cafés and meandering rivers.

In the television programmes there are three sections. Short exchanges of authentic French are picked up, analysed and taught by two presenters, using captions, neat animated cartoons and re-sequences. I'm not too sure about the early stress on grammar points, but they are not a major part of the sequence and they do not in the event intrude. The overall impact is effective.

A short interview entitled "Rencontres" follows, in which the learner in England encounters ordinary French people in the street. Programme one, for instance, has passers-by in Grenoble telling the interviewer what there is to do in their town. The vocabulary which emerges is pretty daunting, but the aim is basic comprehension rather than assimilation for active use, and this is achieved by presentation, re-plays and the transcript in the accompanying book.

Each programme concludes with a short sub-titled film report about an

Flavour of France

Brian Hill looks at the BBC's multi-media language package for beginners

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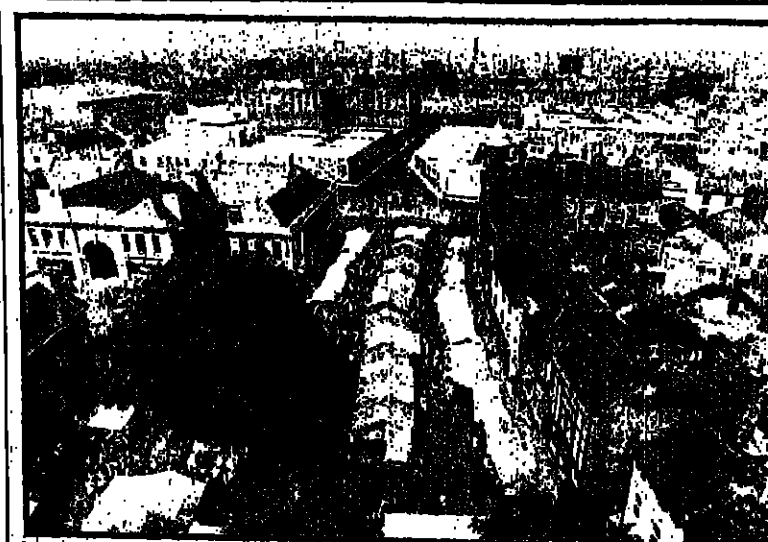
Each programme concludes with a short sub-titled film report about an

aspect of life in France. The beginner has no chance here of understanding the language content and in spite of the sub-titles some home learners may well be frightened off. It is a pity that the commentary was not made simpler and accompanied by a more supportive listening strategy, since the films themselves are attractive and visually informative.

Although I should have liked more specific links within the programmes between the various elements of the course, the radio does back up its television counterpart, taking the same themes and providing the learner with progressive practice. Simple recorded interviews are followed by a series of activities. There is an enthusiastic feel to the presentation, and the addition of a topical report from BBC correspondents is a good idea.

The accompanying book (whose publication was again delayed) costs £5.25 and is good value for money. It contains transcripts of all the interviews and actuality sections together with notes, vocabulary and further information. I am, however, worried about the lack of activities (exercises?) to involve the learner in practising the language. For programme one there are 20 pages, of which only two are devoted to supplementary exercises, a potentially serious imbalance for learners wanting to acquire the language.

A *vous la France* will be followed in the spring by a series of more advanced documentaries called *France actuelle*. Overall, this major new initiative by the BBC will be welcomed, but I wonder how much progress Joe Brown will make if he tries to continue his studies alone? More, I'm sure, if he joins one of the available evening classes with a teacher to guide him through the various elements of the course and give him some additional and necessary structured practice.



foreign countries and their capital cities (if it was, Central Television would presumably have called it *Naming Places*). Nor does the series tell us the exact length of the Amazon, the number of people who live in Brussels or even the height of the Matterhorn.

Instead, it contents itself with providing far more useful introductory material for the kind of geography curriculum studies topic work undertaken in many primary schools.

One of its main concerns is to introduce what is apparently (though fortunately not on the screen) called "geography" - the map-work which many junior-age children find difficult to grasp. Hence, in the first programme there was an animated fly-on-the-ceiling view of a classroom which acted as links to the animated plans that cropped up later. In following programmes this idea is taken further.

Central TV cameramen have been

clearly fulfilled a need by bringing language learning to people who would not otherwise have entertained the idea.

Purists might have shuddered at some of the exchanges. "Nous avons poulet basquaise," said the waiter. "What's that?" quipped Joe Brown. "Chicken in a basket?" *Excuse my French* was not designed to teach the language, but to motivate or recruit, and as such it worked very well.

The core of the trilogy is the 15-part radio and television series called *A vous la France*.

The first BBC language programme, broadcast some 60 years ago, was justified as enabling listeners "to avoid the necessity of having to visit the country". The aims of *A vous la France* are, happily, totally different. Great care has been taken to capture the flavour of the "real" France and not just the France seen by the tourist.

Factories, laboratories, offices are as much part of the scenario as cafés and meandering rivers.

In the television programmes there are three sections. Short exchanges of authentic French are picked up, analysed and taught by two presenters, using captions, neat animated cartoons and re-sequences. I'm not too sure about the early stress on grammar points, but they are not a major part of the sequence and they do not in the event intrude. The overall impact is effective.

A short interview entitled "Rencontres" follows, in which the learner in England encounters ordinary French people in the street. Programme one, for instance, has passers-by in Grenoble telling the interviewer what there is to do in their town. The vocabulary which emerges is pretty daunting, but the aim is basic comprehension rather than assimilation for active use, and this is achieved by presentation, re-plays and the transcript in the accompanying book.

Each programme concludes with a short sub-titled film report about an

Images in maths

SCHOOLS TELEVISION

Junior Maths
Central TV, 11.20 am Mondays, repeated 9.48 am Thursdays, broadcast throughout the year.

Software and workbooks published by Oliver and Boyd, Robert Stevenson House, 1-3 Baxter's Place, Leith Walk, Edinburgh, EH1 3BB.

Mathematics can be a very visual subject. *Junior Maths* presents the use of images and activities needed by young juniors in their mathematical thinking. The weekly 15 minute programmes make excellent use of the medium of television.

Each programme contains half a dozen related items, many are studio presentations, where we are shown mathematical activities being carried out and hear stories about a Mathematician. Some items are film or animated drawings.

October's programmes are all related to geometrical work. Some other textbooks treat tessellations as little more than fitting together triangles and hexagons, these activities are often inventive and exciting for example programme three (October 1) shows how to design more advanced tessellations with the aid of a geoboard.

Presenters Fred Harris and Mary also use a computer program to design similar tiles and to print out the corresponding tessellation patterns.

Similarly, programme five (October 15) shows interesting extensions of standard work on reflections. We see traditional Hindu Rangoli patterns being made by an expert and then by some children. A computer program which produces Islamic patterns is demonstrated in the studio along with other ways of developing and analysing patterns. Such work contains a wealth of mathematical ideas and the activities shown can be easily imitated and followed up.

The value of these programmes is not in what is learnt whilst watching, but in what is learnt in the work done afterwards. Children are not told explicitly to try things themselves, but are subtly persuaded to carry out a task which looks inviting.

The studio setting is that of a workshop with a BBC Micro on hand, and the type of computer program shown is different from much educational software: programs are seen as "tools" for the children and the teacher, rather than "tutors" carrying out an instructional role. The programs mentioned above help you design patterns. The program *Traverse* (October 2) allows the user to control a path by giving directions. The "graphics" program *Dart* is shown in programme four. LOGO-style instructions help create a picture of a robot in the corner, ready to enable you to make a particular job when needed. More, the programs shown are available from Oliver and Boyd; others, such as *Leapfrog* series, but, of course, as advance warning so that a teacher can prepare any materials needed for the low-up work. It also gives information on the practical methods used and on sources of materials.

The use of visual images is not restricted to geometrical work. Each current program is presented by a short film of disembodied hands manipulating complements of sets. Some of the film sequences will seem familiar to those who remember the *Leapfrog* series, but, of course, are equally rich in ideas to follow through each week plenty to do.

Not only do we see images in mathematics, but we see images in mathematics. We see an image of mathematics as a thought and action.

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Classified Advertisements

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Appointments vacant

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Headships

Deputy Headships Senior Masters/Mistresses

Other Appointments

County of Cleveland

An equal opportunities employer.
CLOSING DATE: 19th October, 1984, unless otherwise stated.
Application forms and further details for the undermentioned posts obtainable from and returnable to the County Education Officer, Education Office, Woodlands Road, Middlesbrough, Cleveland TS1 3BN (Telephone Middlesbrough 248165 Ext. 3017) unless otherwise stated.
Financial assistance with household removal expenses may be available in approved cases.

PRIMARY SCHOOLS
NEWSTEAD PRIMARY SCHOOL, Hutton Lane, Guisborough, Cleveland TS14 8AA.
HEAD TEACHER (Group 6)
Applications are invited from suitably qualified and experienced teachers for the Headship of this new Primary School to be established in September, 1985 by the amalgamation of the present Junior and Infant Schools, including a 20 place Nursery Class.

CAPTAIN COOK INFANT SCHOOL, Stokesley Road, Merton, Cleveland, TS7 8DU.
HEAD TEACHER (Group 4)
Applications are invited from suitably qualified and experienced teachers for the Headship of this well established Infant School serving an area of private housing to the South of Middlesbrough, from January, 1985.

HARRY DACK INFANT SCHOOL, West Park Avenue, Loftus, Cleveland TS13 4RL.
HEAD TEACHER (Group 4)
Applications are invited from suitably qualified and experienced teachers for the Headship of this Infant School with Nursery Class, serving a township in the rural area of East Cleveland from January, 1985.

ST. AIDAN'S C OF E PRIMARY SCHOOL (AIDED), Loyalty Road, Hartlepool, Cleveland TS25 6BA. (Tel: Hartlepool 73895).
DEPUTY HEAD TEACHER (Group 6)
The Governors invite applications from suitably qualified and experienced teachers who are practising Communicational Members of the Church of England. The successful applicant would commence duty in January, 1985. Further details and application forms may be obtained, on receipt of a stamped addressed envelope, from the Head Teacher, Closing date: 15th October, 1984.

ST. BEDE'S R.C. PRIMARY SCHOOL (AIDED), Green Lane, Stockton, Cleveland TS18 0DW.
ST. JOSEPH'S R.C. PRIMARY SCHOOL (AIDED), Ragworth Road, Norton, Stockton, Cleveland TS20 1HR.
ST. MARY'S R.C. INFANT SCHOOL (AIDED), Tenbyson Avenue, Grangetown, Cleveland TS8 7AD.
SCALE 1 (INFANTS)
Applications are invited from practising Roman Catholics for Scale 1 Infant posts at the above named schools.
Application forms obtainable from and returnable to the County Education Officer, for transmission to the Chairman of the Governing Bodies.

SECONDARY SCHOOL
EGGLESCLIFFE SCHOOL (11-18 mixed comprehensive, 1,121 on roll), Uxley Nook Road, Egglescliffe, Cleveland TS18 0LA. (Telephone Egglescliffe 783888).
SCALE 1 ENGLISH
Required for January, 1985, a teacher of English to teach to 'A' level and to teach some Drama. Closing date: 15th October, 1984.

HEADTEACHERS
Required April 1985
1. **STIFFORD COUNTY PRIMARY SCHOOL**
(Group 4)
Parker Road, Grays.
2. **JACK LOBLEY COUNTY PRIMARY SCHOOL**
(Group 4)
Leicester Road, Tilbury.
3. **WICKFORD COUNTY INFANTS**
(Group 3)
Irton Hill, Wickford.
4. **PEAR TREE MEAD COUNTY JUNIOR SCHOOL**
(Group 4)
Trotter Road, Harlow (re-advertisement).
Required April or October if possible.
S.P.A. payable for schools 1 and 2 (£201 p.a.).
L.F.A. payable for each of the above schools (£258 p.a.).
Removal and disturbance allowance scheme in operation.
Please send photocopy s.a.s. for form and details to County Education Officer, P.O. Box 47, Threadneedle House, Market Road, Chelmsford, Essex, CM1 1LD.
Closing date: 26th October, 1984.

5. **GALLEYWOOD ST. MICHAEL'S C. OF E. (AIDED) JUNIOR SCHOOL**
(Group 5)
Barnard Road, Galleywood, Chelmsford.
Applications are invited from suitably qualified and well experienced Teachers for the post of Headteacher of this Group 5 school. Applicants should be committed Christians in sympathy with evangelical C. of E. teaching and worship.
Application forms and details from the Area Education Office, Mid-Essex Area, P.O. Box 398, 'A' Block, County Hall, Chelmsford, Essex, CM1 1JW.
Closing date: 26th October, 1984.

ESSEX
County Council

PRIMARY HEADSHIPS

continued

CUMBRIA
COUNTY COUNCIL
SHANKILL PRIMARY SCHOOL
Group 1, nor 45
Required for January 1985.
HEAD TEACHER. Applications are invited from suitably qualified and experienced teachers.
Further details and application forms obtainable from, and returnable to, Assistant Director of Education, North-East Division, Education Office, 2 Portland Street, Carlisle, CA 1 1PU by 19th October 1984 (s.a.s. please). (302461)

DORSET
ST ANDREWS CE (AIDED) FIRST SCHOOL
Head Teacher (Group 3).
Required from September 1985.
Application forms, returnable by 19 October, and further details from the Education Officer, County Hall, Dorchester DT1 1XJ (footscap s.a.s. please). (304951) 110010

DURHAM
COUNTY COUNCIL
HEADSHIP
Applications are invited for the above post at the following school:
WITTON LE-WEAR COUNTY JUNIOR MIXED & INFANT SCHOOL
Group 1
Application forms and further details available from the Director of Education, County Hall, Durham, on receipt of a footscap stamped addressed envelope to be returned by Friday 19th October, 1984. (304951) 110010

Wiltshire
Primary Education
HEADTEACHER POST
Ludwell County First School, Shaftesbury GROUP 1
HEAD TEACHER required for January or April 1985, for this 6-9 First School. Ludwell lies close to the Wiltshire/Dorset border on the A30 in the South of the County. The original school building has been extended and there are good modern facilities. Ludwell School forms part of a 3 site comprehensive system in which First and Middle Schools in both Wiltshire and Dorset are linked with Shaftesbury C.E. Aided Upper School. Application form and further details (S.A.S. please) from and returnable to the Chief Education Officer, Education Department, (ST/TF/PM), County Hall, Trowbridge, by 23rd October, 1984.

SCALE 2 POSTS
St Sampson's Infants School, Bath Road, Cricklade, Swindon SN6 6AX
Head Teacher: Mrs S.E. Collins
Estimated N.O.R. - January 1985 - 152
Required January 1985, an experienced and enthusiastic Scale 2 Teacher of Infants to direct and co-ordinate the teaching of Mathematics from schemes Macmillan Mathematics and Computing (BBC Model 'B') throughout this Group 4 School, arranged in three two-teacher co-teaching units.
Application forms available from the Head Teacher (S.A.S., please) and returnable to her by 15th October, 1984.

Wiltshire C.E. Aided Primary School
Middle Wiltshire, Salisbury, SP4 1SD
RE-ADVERTISEMENT
Required for January 1985 a Scale 2 enthusiastic teacher to take responsibility for the provision of Science and Auto Visual Aids. An interest in Computers and Basic Games would be an advantage. Wiltshire is a lively rural school with close Church links.
Written letter of application, stating age, giving particulars of education, training and experience, the nature and dates of two references to be sent to the Head Teacher by 15th October, 1984 (S.A.S., please). Further applications will be considered and need not reply.

SCALE 1 POST
Wootton Bassett Primary School
Wootton Bassett, Wiltshire, SN74P
Head Teacher: Mr J. L. Lippin
Estimated N.O.R. January, 1985 - 275
Required January 1985, Scale 1 teacher to take responsibility initially for a 3rd and 4th year mixed ability class. Candidates should be enthusiastic in developing boys' P.E. skills and an ability to organise and manage the school's teaching resource materials.
Letter of application, CV and the names and addresses of two referees to The Head Teacher at the School by Friday, 12th October, 1984, please. (3002)

Inner London Education Authority
HEADSHIPS
Applications are invited from suitably qualified and experienced teachers for the following headships:-
JOHN RUSKIN (II) SCHOOL
John Ruskin Street (Walworth Road) SE5 0PQ
Vacant 1 January 1985. Roll 98 plus 91 p/t nursery plus 9 language disordered unit. Burnham Group 4 plus Inner London allowance.

MULGRAVE (II) SCHOOL
Rectory Place, (Wellington Street), SE18 5DA
Vacant now. Roll 120. Burnham Group 3 plus Inner London allowance. Open plan building.

OLD FORD (II) SCHOOL
Wrights Road, E3 6LB
Vacant now. Roll 174 plus 30 p/t and 23 p/t nursery. Burnham Group 4 plus Inner London allowance.
Please send photocopy s.a.s. for application form and further details to Education Officer, EOI/TS10, County Hall, London SE1 7PB. Closing date for the return of completed forms 19 October.
ILEA IS AN EQUAL OPPORTUNITIES EMPLOYER

ESSEX
County Council

HAMPSHIRE

SOUTH EAST HANTS AREA
WAITE END FIRST SCHOOL
Mill Road, Waterlooville, Hants.
APPOINTMENT OF
HEADTEACHER, Group 3
County Councils are invited for the post of HEADTEACHER, Waite End First School with effect from Easter 1985.
Group 1 to Area Education Officer, P29 1UT, Hants, s.a.s. for further details and application forms. Closing date: 28th October 1984. (06176)

NORTH YORKSHIRE
Applications are invited from suitably qualified and experienced teachers for the following Headship Appointment:-
KETTLEWELL WITH STAIN BOTTOM (CP)
Nr. Skipton
Group 1
MARKINGTON C.E. PRIMARY SCHOOL
Near Harrogate
(Group 1)
Please send stamped addressed envelope for application form and details to the County Education Officer, County Hall, Northallerton DL7 8AE to whom completed forms should be returned no later than 19th October 1984. (30182) 110010

OXFORDSHIRE
COUNTY COUNCIL
CHILTON C.E. SCHOOL
Near Didcot
Applications are invited for the Headship of this Group 3 School vacant from 1st January 1985.
Further details and an application form available from the Chief Education Officer, County Hall, Northallerton DL7 8AE to whom completed forms should be returned no later than 19th October 1984. (30470) 110010

REIGATE PARISH CHURCH (AIDED) FIRST SCHOOL
Reigate
HEADTEACHER required from the commencement of the Autumn Term 1985 for this Group 2 C/E (Aided) First School for pupils aged 5-8 years.
N.O.R. 114.
Salary scale £9504-£10,536 p.a.
The Governors look for an experienced first school/infant trained teacher who would be expected to maintain the school's close spiritual links with the local Anglican Evangelical Church.
Applications forms from:- Rev Richard I. Thomson, The Vicarage, 76 Church Street, Reigate.
Completed applications should be returned not later than 19 October 1984.



SURREY COUNTY COUNCIL

* FRINGE AREA LONDON ALLOWANCE £268 p.a. THROUGHOUT THE COUNTY.
* Temporary housing may be available.
* Generous relocation expenses in approved cases.



HEADSHIPS

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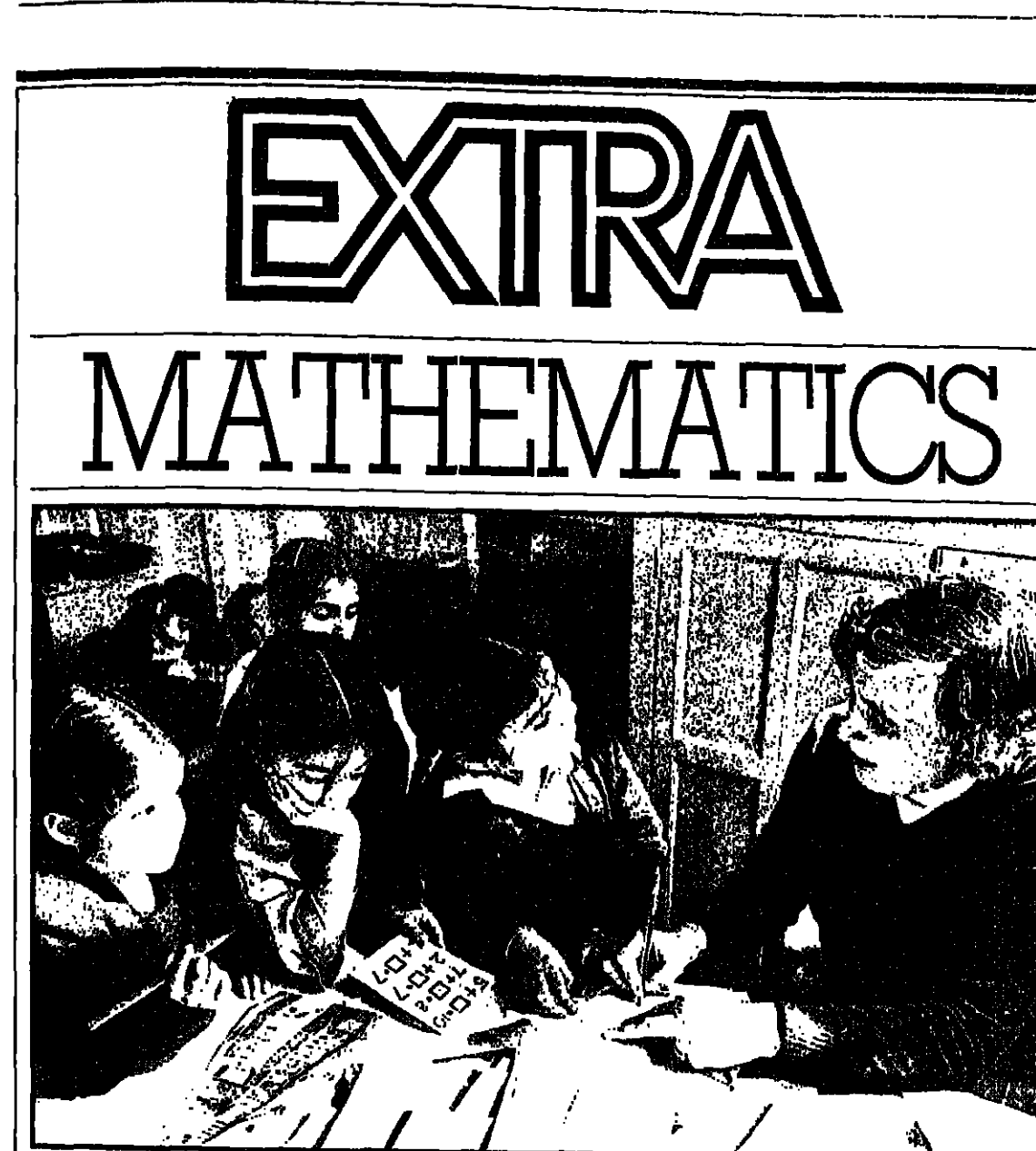
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N.O.R. 114.
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Group 5 Roll 301
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KENT COUNTY COUNCIL

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Life after Cockcroft

Francis Kellaway considers the impact "Mathematics Counts" has had on the subject associations

In the years immediately preceding publication of the Cockcroft Report, *Mathematics Counts*, there had been a ferment of activity among interested bodies. Meetings and conferences galloped to an overwhelming mass of submissions of evidence.

Every Tom, Dick and Harriet knew there was something amiss with the state of mathematics teaching and of pupil attainment (or lack of it). In the all-pervading jargon, there was a discernible common core of opinion on these matters.

When, however, it came to proposals for reform or improvement, the remedies forthcoming ranged from the plausible to the eccentric, to the extreme verges of lunatic impracticability. It was one of the successes of the Cockcroft committee that they were able to distil from the complex and contradictory material before them (and after lengthy, doubtless conflicting, deliberations) some positive and purposeful conclusions.

What became increasingly recognized throughout the two years after the report was issued was that neither were its contents so novel nor its recommendations such a panacea as its first rapturous welcome suggested.

One great achievement of the exercise, nevertheless, was the renewed interest that had been aroused in teachers and parents about the hazards of teaching mathematics in a re-structured educational system set in a society of which the *mores* were unstable as quicksand. The points at issue were not new: criticism by employers of the lack of numeracy among school leavers had been swelling, at least ever since the war; the examination system had more detractors than supporters, and the training and subsequent quality of many mathematics teachers were equally suspect.

But a significant factor that brought a public (and political) realization that "something must be done" was a report issued by the Institute of Mathematics and its Applications in March 1978. Described as "devastatingly disturbing" it showed, following a nationwide survey of more than 8,000 children in England and Wales, that general levels of comprehension and calculation were abysmal. The time for sweeping unpalatable facts under the carpet had passed. The Prime Minister, Mr J. Callaghan, had initiated a "great debate" on the subject. There was a green paper. There was wringing of hands, media publicity and a general howl.

Inevitably, a committee of enquiry was the first answer. The consequential Cockcroft Report was released in January 1982. So we come to the nub of the matter. What impact has the report had? What is being done about its recommendations? What, in particular, have been the reactions of the subject associations (the IMA already mentioned, the Association of Teachers of Mathematics, and the Mathematical Association)? For it is these bodies, more than any other group of factors, which have the power to influence future developments in the colleges of education and in the mathematics classrooms.

It is not inappropriate, before seeking some answers to the questions just raised, to reiterate one's constant plea to all concerned with the teaching of mathematics that they should obtain the benefits of membership of one of the three associations mentioned. Among their objectives is a common desire to promote good methods of teaching, to relate the subject more closely to the powers and needs of children, and through meetings and publications to interchange ideas and provide support for colleagues.

The IMA as one instance, has inaugurated a new journal, *Teaching Mathematics and its Applications*, offering "interesting and stimulating material" which is already proving invaluable as a means of enlivening classroom. Meanwhile, the Mathematical Association's longer established *Mathematics in Schools* goes from strength to strength. The repercussions of Cockcroft are clear in many articles in recent issues. An employer's commentary reminds readers of the admirable work of the Schools and Industry committee of the association, itself exemplifying the Cockcroft plea for greater liaison between teachers and employers.

Reflections from a primary school viewpoint include a comparison with the Bullock Report (which, it is suggested, offered real guidance to teachers), concern that too little consideration was given to how children learn mathematics, and regret that the report includes no mention of play, an essential concomitant of junior school activity.

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Life after Cockcroft

The contents sheets for the 1983 and 1984 volumes of *Mathematics in School* show that concern about the issues brought out by Cockcroft indeed continue to dominate discussions about contents of the curriculum, teaching techniques, and examinations. As for the last-named, the Mathematical Association, already noted as an examining body, has recently introduced a new diploma "in the teaching of mathematics to low attaining pupils in secondary schools". Intended for teachers with some experience of work of this nature who "wish to increase their skills or confidence in this area and equip themselves to make a more informed contribution to school policy", the diploma course involves at least 200 hours of "contact-time" at an approved institution, together with private study and practical association with pupils.

The special needs of low attainers, aspects of the curriculum, and modes of assessment are major constituents of the course. Not unconnected is the issue by the Association of a variety of classroom resource material (though much of this is suitable also for groups of different abilities) which meets the criteria for display matter "where use should not be underestimated".

The MA is, in fact, constantly on the lookout for supporting material. To recall paragraph 314 of the report: "although the printed word is seldom a satisfactory means of introducing new mathematical concepts, the same limitation does not apply to the use of mathematical problems, puzzle and topic books". All the associations are active in this field.

Another paragraph of the report (243) also repeatedly crops up in articles and discussions. This is the section which suggests that mathematics teaching at all levels should include exposition by the teacher, discussion,

practical work, consolidation and practice of fundamental skills, problem solving and investigational work. It is clear from the literature and from reports of meetings that many teachers accept this as a reasonable statement of their own intent, and that there is much striving to achieve something comparable in the lessons they present to their classes.

Mention of two examples, selected virtually at random, must suffice to indicate the type of activities being undertaken by enthusiastic teachers. There is the Kent Mathematics Project (subject of numerous articles in the TES, the *IMA Bulletin* and elsewhere). This has developed a bank of material - teachers' guides, books, tapes, worksheets - covering different levels of ability and allowing individual work at differing rates of progress.

Secondly, an in-service course in Wales considered the implications of the report. Subsequently the Faculty of Education at the University College of Swansea has issued a book, edited by T H F Brissenden, containing the proceedings. Available from the college, price £5, it showed that in different schools over a wide area there was much professional thought being given to the predicaments highlighted in the report. It became evident that the more interchange of ideas about experiments (successful or not), materials and methods, assessment and evaluation, then the more confidence would be engendered in the individual teacher and the more pupils would benefit.

The stimulating papers presented at this Welsh course constitute a book of high quality. What cannot be stressed too strongly is that meritorious work is being carried out all over England and Wales, but all too often in isolation. Even where teachers' centres are effective, their deliberations can be parochial. Hence the repeated pleas that membership of a national body can help both the individual and the cause of mathematics teaching generally.

Exchange of ideas

Ramesh Kapadia reports on ICME V, Adelaide

There were 1984 delegates and accompanying persons at the Fifth International Congress on Mathematical Education held in Adelaide on August 24-30 1984. It is the sort of coincidence mathematicians revel in. The 1,786 full participants came from 68 countries, including 86 from the United Kingdom, who made a substantial contribution both in terms of oral and visual presentations. The Congress had plenary sessions and many other simultaneous talks but also allowed significant time for small group discussion, putting into practice an oft-repeated yet little-heeded educational precept. This avoided the monotony of hours of lectures.

The discussion was organized into seven theme and seven action groups. The action groups dealt with early childhood, elementary, junior secondary, senior secondary, tertiary, teacher education and adult. The theme groups considered the following: mathematics for all; teacher development; technology; theory; curriculum; applications; problem-solving. Each of these areas were divided up into smaller topics; sometimes two groups considered the same topic to ensure group sizes of under 30. Thus each participant did have the opportunity to take an active part in some of the proceedings. This had some disadvantages as people came from widely varying backgrounds with differing experiences, so some of the discussions were not particularly fruitful. Nevertheless many groups did have a successful experience. Moreover, it encouraged contact with the same small group of people over an extended time.

There were four plenary speakers, beginning with Ubratan D'Ambrosio (Brazil) who spoke about "The Sociocultural Bases for Mathematics Education". He used vivid slides to show that many mathematical ideas were embedded within the cultures of developing countries and he went on to argue that these ideas should be utilized in education.

Jeremy Kilpatrick's (USA) theme of "Reflection and Recursion" illustrated how each age defines its own ideas for teaching and learning. He discussed how computers have affected our metaphors in the equating of thinking with information processing or teaching/learning with programming. He surveyed various models of the mind and exemplified Lawlor's ideas by showing three microworlds for solving $75 \div 26$: counting on one ($76, 77, \dots, 101$); a money microworld of $\frac{3}{4} + \frac{1}{4} + 1$, working in dollars for the fractions; the usual paper sum solution. A teacher needs a model of the pupil's mind and Kilpatrick wondered whether one could supply children a language to reflect on their own activities.

Renfrey Potts (Australia) talked about "Discrete Mathematics" in an entertaining yet informative lecture. He put across salient aspects of the subject with some interesting applications, showing the role discrete mathematics might play in the school curriculum. In particular he argued that difference equations ought to be studied as a means of introducing non-linearity, amenable to computer calculation.

The fourth plenary speaker was the president of ICMI, Jean-Pierre Kahane (France). He surveyed research on "Measure and Dimension" beginning with Pythagoras and ending with current work which is currently focussed on fractals, with applications in biology and economics.

There were two other plenary sessions - a public forum on "Policies for Education in the Mathematical Sciences" and a debate entitled "The Microcomputer: Miracle or Menace in Mathematics Education?". While there was a good rationale for these sessions, neither worked particularly well as there was insufficient incisive comment to bring out differing points of view. Other sub-plenary sessions dealt with the effect of technology and the nature of proof.

In my action group, after a short lecture, issues about the place of rigour and abstraction at tertiary level were considered. Many took part in the discussion and some common understanding, as well as evidence of differing practices, quickly emerged. It was agreed that one needs to move away from absolute rigour towards more concern with student under-

The third of the national bodies, the Association of Teachers of Mathematics, its publications list shows that many of the features of Cockcroft had been anticipated. Apparently abundance, activity books which offer a score of starting points for mathematical investigations suitable for a range of ages and abilities, and a series of discussion books typify the variety available. Collections of topics under the title "these have worked for us" help cross-fertilization of ideas among schools. The periodical *Mathematics Teaching* is full of germane material.

A new ATM discussion book *Teaching Styles* (£3.50) represents another part of the association's response to the Cockcroft Report. It is a starting point, the paragraph 314 mentioned above but the work extends into a related study of other sections. Self-analysis is encouraged, procedures of different aspects of teaching are explored, and the strategies of work in mathematics are developed. As the committee responsible for the compilation state: "This is not a book to read and then shelve. It is a book to become involved with, a book to share a book to be argued with."

Involvement and argument are, indeed, some of the useful by-products of Cockcroft itself. Teachers have been encouraged by a recognition of the problems confronting them day by day. Answers may not yet have been found and we have certainly not become a numerate nation overnight. Whether lack of academic achievement by the majority is peculiar to mathematics, a moot question. For mathematics, however, there is at least a pointer of hope in that nearly three years after the publication of an educational report it is not yet pigeon-holed and forgotten. Quite the reverse; its findings are being seen to be even more relevant to the current situation in mathematics and industry. How can the performance of children at all stages, and of school-leavers in particular, be demonstrably improved is, however, still an unknown quantity.

Exchange of ideas

groups were concerned with the theory of mathematics education and the relationship between research and teaching; it is intended to have a full conference on the former area next year. Other study areas were statistics, psychology, language, history and computation. Each of these groups has been engaged in development work for a number of years as was evident from the presentations.

A workshop was open for people to try out stimulating material. Organized activities included building a geodesic dome and designing paper aeroplanes. There were even children doing mathematics in the workshop. Apart from the formal programme, there were many social events including "Happy Hours" each day to sample Australian wine. There was an open reception in the Festival Theatre, an organized excursion in the middle of the conference and a farewell gathering. Long lunch breaks as well as mid-morning and mid-afternoon refreshments provided further opportunities for meeting old friends and making new ones. A buffet dinner, a concert and an Australian ball dance were available as evening entertainment.

Overall, the conference was well-organized and did provide an opportunity for an exchange of ideas. The level of discussion seemed better than at the last conference four years ago. The main thrusts in mathematical education seem to be in the role of problem-solving and a consideration of how computers will or should affect the mathematics curriculum. In problem-solving the focus is on the nature of mathematics while computers may diminish the authoritative role of the teacher to make the subject more approachable. Both problem-solving and computers may help make mathematics more human.

Ramesh Kapadia is a Senior Lecturer, Maths Education Polytechnic of the South Bank, London.

Casting for a new role

Don Skilling describes the CREAM project for primary maths coordinators

Talking about mathematics and her class of eight year olds, a young teacher commented: "They are all on it." Of course, all technology may be abused as well as used. The abuse of the written word has been at the expense of practical experience and direct human contact. A book may not satisfy the educational needs of a child but it can make a contribution to the teacher's feeling of security.

The main source of poor mathematics learning in primary schools is the teacher's lack of knowledge of the subject, of how children learn mathematics and teaching methods. These factors contribute to a general anxiety about mathematics among teachers. Massive in-service training is needed to change attitudes and establish practical experience and discussion as the basis for mathematics teaching.

Faced with the problem of improving mathematics education in the primary schools, I decided that training co-ordinators and supporting them in their duties was my first consideration. They were going to meet problems associated with curriculum change as well as being asked for greater commitment than some have been giving in this area of their work. The co-ordinator is being cast in a new role.

A candidate for a co-ordinator's post was asked how he would influence other teachers. "By setting an example of good practice in my own room," he replied, "and being available in the staff room for discussion." The duties of the co-ordinator outlined in the Cockcroft Report extend responsibility and management well beyond the mathematics resource cupboard and into the whole school in a very direct

manner. The co-ordinator is a part of the management team.

I decided to place emphasis upon three basic areas of activity involving the co-ordinators in continuous in-service training, establishing them as part of the management team in their schools, support for teachers during self-evaluation and in-service training; and liaison and interchange of ideas between schools.

The title Curriculum Recording, Enrichment and Aid in Mathematics indicates the activities involved. This reduced neatly to "CREAM" (fourteen schools in the pilot project were formed into two area groups with regular meetings of the co-ordinators throughout the year).

There is a dangerous delusion that practical methods and discussion are being used adequately. That is not the case. If it were, we would have better results. In many classes the practical work is negligible and is seen as an extra to the mathematics teaching that goes on in their books - that is, the mechanical juggling of numerals according to dogmatically stated rules. They would get more truly mathematical experience by juggling with Indian clubs!

During the CREAM project, the co-ordinator asked teachers about the mathematics they had taught, or directed. Discussion continued by determining the basic content of the lesson with regard to facts and skills, conceptual structures and general strategies.

The dialogue between the co-ordinator and the teacher was the lifeblood of the project. Based upon a set of questions, it enabled the co-ordinator to have an analytical and structured discussion with individual teachers and

included a reminder of the possible variety of mathematical activities. The intention was to create an atmosphere of positive acceptance in order to build-up teachers' confidence and trust. This would enable professional development to be structured to the teachers' needs as they were revealed and accepted. The dialogue was very valuable and improved as the project developed. It also helped to get the co-ordinators accepted and established in their new, extended role.

After this general discussion of their work, further development was to focus upon the content and method of a lesson, or group of lessons about one aspect of the curriculum. Teachers were encouraged to explain and produce in analysis of the work they had done. Direct questions about method, apparatus and language produced some excellent records of work by individual teachers.

The co-ordinator organized visits to other schools for talks or workshops, or to see displays of work. This was a novelty for some teachers and was very popular. A joint topic on the subject of "Time" was undertaken by a group of schools. The aim was to share and compare ideas, and to encourage discussion between teachers. Although the main focus was on mathematics, it also proved an excellent example of how a topic can involve all aspects of the primary school curriculum. Teachers' reports were collated by the co-ordinators and presented in the form of charts which roughly represent stages of development. Accompanying the charts are a set of colour slides of the children working.

By the end of the year, I knew that I had a group of well-trained and experienced co-ordinators who had the au-

thority that comes with substantial knowledge of the curriculum together with management skills developed through application. The co-ordinators and headteachers mentioned changes of attitude and approach in classrooms. Comments such as: "There is a greater variety of work and more order," and, "Teachers are more aware of the importance of the early stages, and are not rushing through them," were common. Some of the anxiety has been replaced by confidence and it has been noticed by headteachers that methods which place greater reliance upon practical activity and discussion are being used.

I supported the co-ordinators in their new role as an active part of the management team. In the words of one co-ordinator: "The CREAM project provided a means for me to be able to talk to every member of staff about mathematics in a structured way. It also took the onus off me - if people were anxious about being questioned, I could remind them that we were working together for the project. As time went by this became less important. As people's confidence increased they were more willing to talk about their maths at any time, and often came and asked me questions or wanted to discuss what they were doing - which hardly ever happened before. I think that this has also had an influence upon the curriculum in general: it has extended to other areas."

Following this year of intense activity in the CREAM schools, headteachers have confirmed the value of the project for the co-ordinators, teachers and children. It has highlighted useful methods for presenting richer mathematical experiences and stimulated interesting individual and cooperative work in the schools.

The project has been taken-up in a modified form by another group of schools in two L.E.A.s and is progressing well. It gives guidance and support to co-ordinators and provides a vehicle in-service training and curriculum development of a permanent nature.

Don Skilling is primary maths adviser, London Borough of Waltham Forest.

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A-level learning and study

Report by John Backhouse and Elizabeth Smith

This article reports a series of interviews which aimed at getting students' retrospective views on their A-level mathematics course. The work was carried out as part of the DES-funded project, "A level mathematics in retrospect".

In September 1983, Elizabeth Smith interviewed 33 students who had just received their A-level results, having started on an A-level mathematics course two years earlier. The students were drawn from five old-established, mixed, Oxfordshire comprehensive schools and no significant difference in A-level mathematics grades was found between those interviewed and those who did not accept the invitation to an interview.

The three major areas covered were concerned with satisfaction with the choice of A-levels and with the A-level mathematics course; learning and study skills; and the perceived usefulness of mathematics. A full report of all three areas will be included in a publication on the whole project available in November. "The present article, however, is concerned largely with learning and study skills."

The study of mathematics is in some ways like the study of other subjects: books are used, notes are taken, study needs to be organized, and revision has to be done. Clearly students interviewed had been given some advice in general studies periods or in a course at the beginning of the sixth form. They remembered being told: "do background reading during free time"; "you should spend five hours per A-level subject per week"; "you should be spending as much time on prep as at school"; "you should do one hour per subject per night".

Most admitted to having ignored

this advice after the first couple of weeks and nearly a third of the students felt that they could have done a lot more work and used their time better if they had been pushed more by their teachers.

The use of books, taking of notes and carrying out of revision are not quite the same in mathematics as for other subjects. No one felt he or she had been taught to use books as a resource, for learning fresh mathematics or for revision by their mathematics teacher. Note-taking in many cases consisted of copying from the board or having notes dictated. No one could recall having been taught how to make notes in mathematics lessons. Guidance on revision, when given, was to do lots of problems and to go through past papers, and most had found this effective.

There are some learning skills which, while not essentially mathematical, are nevertheless particularly associated with the subject—for instance, making generalizations, devising strategies to solve problems, constructing a logical argument, writing in a concise style, and perceiving elegance in an argument and analysis.

A small number of students had been on courses which included specific teaching on some of these. Two students had been on problem-solving courses but one felt that a day was not really long enough for this. Another had been specifically taught on a different course how to set out proof by induction as a logical argument. For the most part, teaching of these skills was indirect. Most students found it difficult to make generalizations and felt that this was a skill which had been gradually acquired, rather than explicitly taught. This was generally the

case with problem solving, too. On the other hand, more than half the students recalled comments such as "don't waffle", or "remember you won't have unlimited time in the exam". This is not to say, however, that they were heeded. Many students commented that they were not bothered about style provided that they got the answers.

Two thirds of the students said they



often or sometimes posed questions to the teacher. A few implied that this was not without risk: "one was made to feel foolish" or "you had to do it on the board next time". Only about one third of the students said they often or sometimes joined in discussion, but most of those who did felt it was a useful way to learn. However, not all their teachers encouraged discussion. A majority of the students said that they were quite happy just to know how to answer the examination ques-

tions, regarding a pass as their main aim. This group included not only those who had difficulty with mathematics but some with grade A at A-level. Some students thought their lessons had been too much orientated towards the examination. One said: "I felt I was not learning mathematics but learning how to do the examination papers. I spent almost 12 months working through past papers and now I have forgotten just about everything."

The students were asked if they were prepared to take things on the teacher's authority. Twenty said they were prepared to, while 11 said they were not. Again, there did not appear to be any correlation between the response and the grade obtained at A-level.

And and/or and

by Keith Austin

Have you noticed how students will often put a comma rather than use the words "and" or "or" in written work? The aim of this article is to highlight some of the confusion that surrounds these two words.

Recently, I had a bottle of tablets which was the instruction: "Take this medicine half to one hour before food, or on an empty stomach." The chemist explained that food in the stomach at the time the tablets are working can reduce their effectiveness. Thus the instruction should have had "and" instead of "or".

On another occasion, a leaflet describing a car-repair insurance scheme stated: "All cars up to 50,000 miles up to four years old... are eligible." However, the garage man made it clear that the "or" was to be interpreted as "and".

Why was "or" used in these instances when clearly "and" was the correct word?

A first clue is obtained by considering the mathematical problem: "Solve $x^2 - 3x + 2 = 0$ ". Is the answer " $x = 1$ and $x = 2$ " or " $x = 1$ or $x = 2$ "? The reason for this ambiguity is that we only have the instruction: "solve". In context, if the problem had been "Find all possible values for x in the equation $x^2 - 3x + 2 = 0$ ", then the answer would have had "and", but if the problem had been "The number x satisfies $x^2 - 3x + 2 = 0$. What is x ?" then the answer would have had "or".

Thus it is possible for the context to indicate whether "and" or "or" is appropriate. Now, in everyday situations the context is always meaningful and so the chemist and garage man could have been guided by the context to interpret their answers correctly with "and" even though "or" was actually there.

This explains why no one had immediately objected to the "or" sentences. However, there still remains the question of why "or" ever got into the sentences.

Possibly this was due to the fact that both are restrictive instructions with negative aspect. When "and" and "or" are put with "not" then confusion can result. For example, should we say "is not divisible by 5 and 7" or "is not divisible by 5 or 7"?

So perhaps the tablets' instruction originally said: "This medicine should not be taken less than half an hour before food or when the stomach is empty", and the car policy "A car not eligible if it has done over 50,000 miles or is over 4 years old". Sentences were then changed to "and" but the "or" remained where it was, removal of the "not" should have changed it to "and". For example, "diamond" means the same as "a not black and not diamond".

This effect of "not" on "and" or "or" also produces a similar effect on "some" and "all". For example, should we say "24 is not divisible by 3 and 8" or "24 is not divisible by 3 or 8"? This shows itself in a mathematical setting in such statements as: "Guest (to manager of hotel) don't like those mice in the room."

Manager: Tell me which you don't like and I will get rid of the others.

Thus "and" and "or" present a veritable minefield for the unwary. However, in tackling these problems in a mathematics classroom there seems scope for linking the mathematics with the use of these words in everyday use, and so showing the aspect of the significance of mathematics.

A level mathematics in retrospect by John K. Backhouse, Gail A. Owen-Schubnell, Elizabeth S. Smith and Peter J. Walter. University of Oxford Department of Educational Studies, 15, Morley Gardens, Oxford, OX2 6PY. Price £3.00 post free in the U.K.

LOGO: A new direction in infant maths

by Martin Hughes, Hamish Macleod and Cathie Potts

The arrival of cheap microcomputers throughout the education system has opened up a number of new options in the teaching and learning of mathematics. At one end of the spectrum the micro can be used as an "electronic wordbook", presenting children with sequences of maths problems and giving reinforcement on their answers. Alternatively, the computer can be used as an exploratory tool, with children discovering for themselves the properties of mathematical "microworlds". At present, the best example of this more open-ended approach is provided by the computer language LOGO.

What is LOGO? At one level, it is simply a computer language like BASIC or FORTRAN: in other words, a code for telling the computer what to do. But at another level LOGO is much more than this. It is rapidly becoming an educational philosophy in its own right, in which computer technology is used to encourage children to explore, discover and learn in their own individual ways.

LOGO comes in many different forms, of which the most widely known is "Turtle Geometry". With Turtle Geometry, the child writes instructions in LOGO to control the movements of a Turtle. The Turtle can be a real robot which crawls around the floor, or a simulated robot on a screen. Both types of Turtle have pens which leave a trail behind them. Typing in the command "FORWARD 100" will send the Turtle forward about 50cm, while the command "RIGHT 90" will rotate it clockwise through 90 degrees.

The child can use these simple LOGO commands as building blocks to construct more complex designs and patterns of their own choosing. Thus the procedure SQUARE can be built-up by repeating 4 times the sequence FORWARD 100, RIGHT 90. The procedure HOUSE can be built from SQUARE and TRIANGLE, and so on.

LOGO is associated most closely with Seymour Papert of Massachusetts Institute of Technology, who now enjoys guru status within the LOGO movement. Papert's book *Mindstorms: Children, Computers and Powerful Ideas* is essential reading for anyone interested in this area. In his book, Papert claims that the LOGO approach can revolutionize learning and free children from the blocks and inhibitions caused by conventional approaches.

For example, he argues that Turtle Geometry provides an ideal bridge between the abstract world of mathematics and the concrete world of reality. By writing mathematical instructions to control the Turtle, children are using mathematics in a context in which they can see the immediate purpose of their actions.

In this country, the main centre for LOGO research has been The Department of Artificial Intelligence at Edinburgh University. This research, directed by Jim Howe, has mostly involved upper primary and early secondary pupils. Our own work, in contrast, has been with children at nursery and infant level. This work has grown out of our earlier research on the way children learn maths. This research indicated the need to introduce children to mathematical symbolism in a context where the symbols fulfilled an immediate purpose. LOGO, we believe, can create such a context.

In order to use LOGO with nursery and infant school children, we have had to develop a simplified version of the LOGO language. For example, we have used commands such as "R2" or "R3" which involve numbers within the child's range of understanding. We have also used a special touch sensitive keyboard called a Concept Keyboard. This has allowed us to start with a very simple keyboard layout, and increase its complexity as the children's understanding of the system has grown.

The main part of our work has taken place in Craigmillar primary school in Edinburgh. Craigmillar is a severely

deprived area where the social problems are profound. The level of attainment in the school is low, in spite of the efforts of an enthusiastic and dedicated teaching staff. Unlike children in the more affluent parts of the city, the children in Craigmillar have virtually no exposure to computers outside of school hours.

With funding from the Nuffield Foundation and the Scottish Education Department, we worked with a group of 16 six-year-olds over a period of five months. The children were withdrawn from the classroom in groups of two or three, although occasionally they were withdrawn individually. The sessions lasted on average for 15-25 minutes, although some sessions lasted for up to 45 minutes.

The sessions usually started with the children discussing what sort of picture or pattern they would make, and perhaps drawing a plan. Then they attempted to carry out their plan. This inevitably led to a considerable amount of discussion between the children, mostly of a mathematical nature. Number, size and shape all featured prominently in their conversations, as they struggled to achieve their aims.

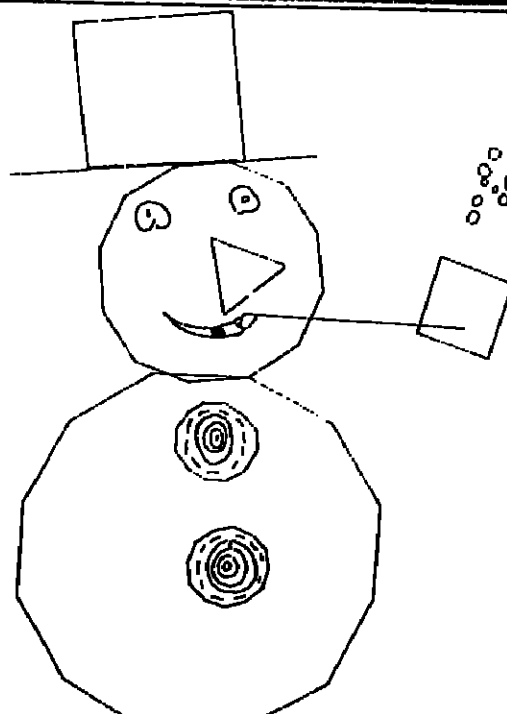
The snowman shown in the illustration was produced by a group of three boys just before Christmas. The children were by this stage making use of prepared shapes—such as squares, triangles and 12-sided shapes generally referred to as "rounds". To produce

the snowman they had to work out what shape to use for each part of the drawing, where it would start and what size it would be. The final product was the result of 45 minutes intense discussion and negotiation between three boys.

At the end of the project we interviewed all the teachers concerned about the effects of the project. There was general agreement that the children's work with the Turtle was characterized by high levels of concentration and absorption, by an increased use of mathematical language, and by a considerable degree of cooperation and collective problem-solving. As the headteacher commented: "It's the sharing and discussion between themselves on the best way to go about something which you don't even get in much older children in this school". The class teacher was particularly struck by the effects of the Turtle work on her children, and has continued the work of the project in her classroom: "It's great, they really love it... they're really thinking".

The positive effects of the project were also revealed by standardized tests. At the beginning and end of our intervention the children were all administered the British Ability Scales by an independent educational psychologist. Statistically significant gains were found on the sub-scales concerned with number and shape, but not on other sub-scales. Interestingly enough, these gains were found only amongst the boys; however, the num-

Andrew Kevin
John
15 12 83



ber of girls in the project was very small (six) and the results should be interpreted with caution.

Our study shows that the LOGO approach is both a feasible and desirable use of the microcomputer in the infant school. Indeed, it looks to be an exciting new departure in the way mathematics is introduced to very young children. However, there are a number of problems which need to be explored further. These are, for example, questions of management and organization which arise when the computer and Turtle are introduced into an ordinary infant school classroom.

There are also problems of how LOGO can be integrated with existing infant mathematics schemes. LOGO shares many important principles with current approaches to early maths—

such as an emphasis on explanation and discovery—but at the same time introduces concepts about shape and number much earlier than in many existing schemes. Finally, there are questions concerned with the development of appropriate teaching strategies. When does the teacher intervene in the learning process, and how? We are hoping to tackle these problems in the next phase of our research.

Martin Hughes has just been appointed to a 'New Blood' lectureship in Education at the University of Exeter, where he will continue his research with the Turtle. A report on the work so far is available from Hamish Macleod at the Department of Psychology, University of Edinburgh, 7 George Square, Edinburgh EH8 9JZ. Please send cheques for £1.50 payable to 'The Craigmillar Project'.

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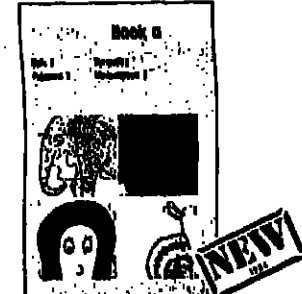
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Step this way

Is it possible that the principle of gradual progression is not the way to teach maths? asks David Womak

What's four take away minus three? This was the question I was asked some years ago by my young son, after he had spent the best part of an hour poring over some of his school maths books.

Being a keen young maths teacher and remembering from my college training that a child's question is the key to open his mind, I took this unsolicited request to be an ideal opportunity to instil in him a firm understanding of the concept of negative numbers. So quickly isolating what I felt to be the central concept involved, I broke the idea down into a number of component steps and prepared to gradually approach the area with which I supposed he was having difficulty.

Launching enthusiastically into a repertoire of teaching techniques including questions, demonstrations and activities, I noticed after some time that my efforts were beginning to meet with looks of puzzlement, boredom and even impatience, causing my own feelings, although concealed, to follow a similar pattern of wilting enthusiasm. Finally my son seemed to "switch off" completely, leaving me altogether frustrated and with a certain feeling of hopelessness.

"Is it me or is it him?", I wondered. "Does he want to understand or doesn't he?" In any event, I couldn't think of any more steps to insert to make the route easier, so finally, with some reluctance, I told him bluntly the answer he wanted.

Thinking about the incident later, I came to the conclusion that my response to his straightforward question had really been an attempt to exploit the situation for my own ends and his resultant attitude had quite sensibly been one of, "Yes, this is all very interesting but please will you just answer the question I asked?"

This personal anecdote is interesting not because it is an isolated case, but because I know it to be typical of many others. Indeed several maths teachers and educators with whom I have spoken subsequently can relate remarkably similar incidents with their own children; and if such incidents are not observed to happen too frequently in the classroom, it may be that only with parents does a child feel free enough to express his immediate and unexpressed feelings.

However, such cases are not confined to parent-child relationships and it was while I was teaching maths to a class of eight-year-olds at a special school that another "disturbing" incident occurred. A difficult but lively boy who had been playing with an electronic maths aid for rather longer than I had intended, came over to me with his face beaming and announced cheerfully: "Sir, I can divide now!", proceeding to demonstrate his skill to me with much pride.

I felt an overwhelming urge to say to him: "Yes, but you can't, possibly understand what you are doing because there are at least two distinct concepts of division involved and several sub-steps to be mastered before you will really be able to understand." Instead, I praised his initiative and ingenuity and attempted to test out his understanding; indeed he did have a mental strategy for dividing any number by any other number.

They had a history of inconsistent and even incoherent performance in arithmetic and this blatant disregard for my supposed professional expertise shook my confidence in traditional teaching methods in this area for quite some time. It was only when I related the incident later in a quiet corner of the staffroom that I discovered this "problem" of illicit learning was not confined to my own classroom.

There is a strong consensus among experts and practitioners that all maths topics should be taught gradually via a number of small graded steps and indeed a large degree of unanimity over the particular order of these steps for any given topic. However, the children's learning behaviour in these two examples does not fit into this pattern and this raises a question which

has lurked at the back of my mind for some time now, namely: are such examples as exceptional as they first appear to be or is it just possible that we may have got it wrong somewhere?

Could it be that mathematics has something in common with music, in that understanding and analysis can sometimes destroy the sheer enjoyment of the subject? We as teachers enjoy learning because that is our chosen professional aim - to understand more. But it may be that children sometimes wish only to be able to acquire a certain skill - not to understand it; seeing mathematics more as a tool like the computer, to be used, and not necessarily to be understood. Understanding brings with it a certain sense of involvement and responsibility, and it's possible that children do not always want this commitment. To insist on children understanding in our time and in our way is to impose a certain moral responsibility which implies - "now that you understand that, you should be able to do this".

Many children are taught maths at home in unstructured circumstances which take no account whatsoever of the careful sequenced development of a topic, and yet not a few of these children aspire to O and A level GCSEs (if this is a criterion of successful learning), at remarkably young ages. The parents of such children I have met have no inborn teaching genius, nor have their children been born with exceptional talents.

In these cases, as in the previous, it seems we must accept the fact that children can and sometimes do learn successfully without the pooled resources and knowledge of teachers and advisers. So is it possible that the principle of gradual progression may not, in fact, be the universal panacea for maths teaching that we have assumed it to be?

Perhaps the reader feels there may be some truth in this for faster-learning children, but for the ordinary child, Jean Piaget's work has surely demonstrated that learning takes place in ordered stages. I, however, even assuming that we should teach in the order in which children learn (which is in itself questionable), Piaget was concerned with only the most general logical categories necessary for an understanding of the world, rather than with specific mathematical topics and procedures. The most central and important implication of all of Piaget's work is that learning takes place through a process of accommodation and assimilation, ("cognitive conflict"), and this epistemological framework lends no support whatsoever to the idea of presenting new knowledge in a series of incremental and almost imperceptible steps.

While not wishing to discuss here the case for or against using behavioural methods with children of average ability, it is widely held that experiments

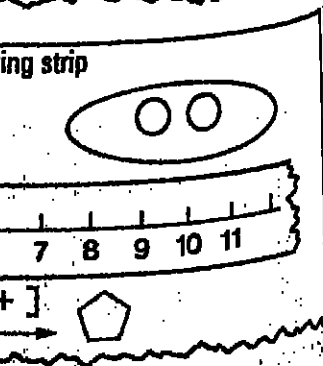
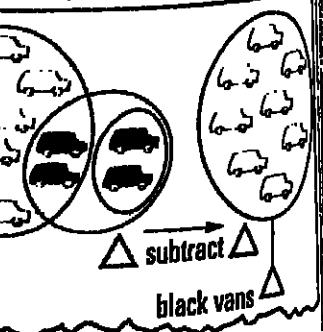
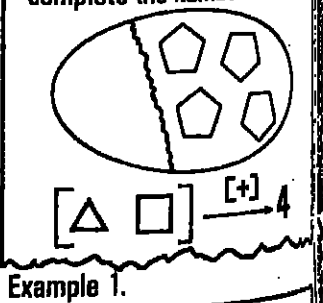
with slow-learning children have shown the superiority of learning in small steps over more "global" learning. It is assumed that slower-learning children require steps as small and as many as possible, so to try to introduce such children to a seemingly complex skill at one fell swoop would surely be damaging, if not dangerous practice.

It is true that children with severe learning difficulties are unable to see one step in relation to other steps or in relation to the whole, and for such children, reversal of the direction of present step by step teaching strategies would indeed be pointless. However, it has also been shown that even slower learners who are made aware of the ultimate learning target or aim, demonstrate a higher level of motivation and improvement in "on-task" behaviour. It may therefore in some cases be only fair to give such children at least the opportunity to try to organize their learning strategies to comprehend a subject and meaningful, if somewhat complex, skill in their own, possibly unorthodox way.

There is certainly no agreement as to the precise order in which mathematical concepts should be taught for even such a fundamental skill as counting - witness the numerous different "concept trees" published in the last twenty years. Nevertheless it might be argued that at least step-by-step teaching enables the teacher to know exactly which stage each child has reached in his or her learning; however this is illusory benefit if such steps are not inherent in the child's natural learning route for the topic. Indeed some may argue that the end result of learning is the only issue of importance, not the understanding of a particular skill or concept was acquired.

Our desire to monitor a child's thinking should not justify the adoption of a methodology which causes a teacher to cope successfully with a large group, by effectively slowing some children down. Rather, we should be searching for a means to exploit the admittedly frightening possibility of thirty individuals making each taking a different route to the desired goal. Children compelled to complete each step by painful step before being

Look at these sets and complete the number sentences



Step this way

continued

allowed to reach their goal are like pilgrims on an enforced penance, crawling on their knees to a holy shrine, before being allowed to receive the tablets of wisdom.

The intention of the current approach to teaching maths is not, of course, to make life more difficult for the learner - rather the reverse. But, although learning a skill by a carefully programmed sequence of steps may be efficient in the short term, learning it in your own way equips you to tackle the next learning task in a still more efficient way - and children need to make mistakes if they are ever to learn.

Many published maths schemes are designed to merge each step so imperceptibly with the following one that the learner may not realize that he is learning, and if the presentation is lavishly festooned with comic-strip characters, it may even fool children into thinking that they are merely playing a game. At its extremes, this presentation tends to what can only be described as a form of occupational glumery designed to absolve the learner from the responsibility of exercising his or her own intelligence.

In many cases the most demanding aspect of the problem presented is to determine just what one is supposed to do with the various symbols on the page, often an organizational skill far in advance of the mathematical content it purports to convey. See the examples below, one of which was studied by a headteacher, a special school teacher and a secondary school teacher all taking an Open University course in developing mathematical thinking who took several minutes of discussion before deciding upon the correct answers. Perhaps readers know of other examples!

The practical implications of adopting such an alternative view of mathematical learning would of course be enormous. Present primary text-book arrangements of topics effectively disrupt any continuity of ideas and there-

fore militate against the motivation of a child towards a clearly defined goal.

A scheme based on a "tell it like it is" philosophy would need to state plainly within each topic section what it was the learner was expected to learn (e.g. how to measure accurately with a ruler; how to add any two numbers less than 100 etc). Resource materials and practice exercises would need to be provided in the most appropriate form to enable children to use and develop their intelligence in planning their own learning strategies, perhaps ignoring some proffered "steps" but asking for additional information when necessary. Telling children the final goal is not a form of cheating, it is the way we as adults like to learn; it is plain, common-sense learning.

Probably the development of modern step-by-step teaching of maths has always seemed a paradigm of pedagogical excellence and it is difficult to imagine how one could teach in any other way. But if we sometimes told children in their own language and terminology exactly what it was we wanted them to learn, then we might be surprised to find them learning it in their own way. Possibly this would mean introducing many mathematical topics at a later time - when children can understand the meaning and the purpose of the skill - but more time could then be devoted at an earlier age to showing children how to exploit their intelligence in any given learning task (for example through simple puzzles or games of strategy).

This, then, is not a reactionary call to ignore the substantial contribution which research has made into mathematical education during the last twenty years. I am suggesting only that the presentation of a meticulously-programmed sequence of steps leading from "lower" to "higher" order concepts is not always the most efficient long-term teaching strategy. Rather we should consider all the evidence with open minds, and not look only at those learning experiences which fit in with our preconceived ideas of how children *ought* to learn maths.

David Womak is a part-time lecturer in mathematics education at Manchester Polytechnic and a teacher of EFL.

The multicultural dimension

by George Joseph



Multicultural education should aim at reducing the widespread Eurocentric bias found in the production, dissemination and evaluation of knowledge in general. Any anti-racist strategy should address itself to the question of its effectiveness in confronting the devaluation of non-European cultures that this bias produces and the unconscious racism it promotes.

The need for a multicultural dimension to mathematics education may be examined from two different vantage points. At one level, how can one eliminate the unconscious racism that underlies the popular view that Europe and her cultural dependencies (USA, Australia, etc) have had a monopoly in the creation, spread and acquisition of scientific knowledge, starting with the Greeks. It is to history that one should look for an antidote for this form of Eurocentrism.

Yet little is gained from introducing the history of mathematics in any formal way into a school curriculum, though a historical awareness of the development of basic mathematical concepts should be part and parcel of a teacher's armoury. It is, however, difficult to find institutions offering courses or books which do not subscribe to the view that mathematics developed from the Greeks to the present day, only interrupted for a few centuries by the so-called Dark Age.

Contributions of Arabs, Chinese, Indians, Mayas and Persians are either ignored or mentioned cursorily. There is little excuse for such blinkered ethnocentrism today with the easy access (for anyone interested) to Joseph Needham's massive seven volumes on Chinese science and the increasing volume of research in this area by Indian and Islamic historians of science.

There exists opportunities at the classroom level to show how pursuit of mathematics has always been a worldwide phenomenon. A few examples to illustrate this point. Pascal's triangle makes its first appearance in a Chinese mathematical treatise, *Sze-yuan Yin-chien* (The Precious Mirror of the Four Elements) about 300 years before the birth of Pascal. Ch'in Chiu-Shao (AD 1247), in a detailed exposition on the solutions of simultaneous equations and other equations of higher degree, used Horner's method 500 years before Horner. Solutions of infinite series for trigonometric functions and the derivation of the series and rational approximation for $\pi/4$ are reported as standard results by Nilakantha about 200 years before the latter was derived in Europe and named after Gregory.

The word "algebra" originated from

the first word of a book *Al-jabr wal-Muqabala* which was written in AD 830 by Al-Khwarizmi, the most famous of the Arab mathematicians during the period of the Islamic Renaissance. Al-Khwarizmi also produced an early version of what has come to be known as Diener's teaching apparatus for solving quadratics which enjoyed such a vogue in schools in the 1960's. And it is quite possible that what is at present taught in A level classes as trigonometry would be very different if the tenth century Arab mathematicians had made a different choice: they were aware of both the Indian use of half-chord (from which derives the present sine function) and the Greek use of full chord. They chose the Indian method and developed it further.

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EXTRA

The multicultural dimension *continued*

Such examples can be multiplied, but they illustrate the point that awareness of non-European heritage of mathematics could serve not only to enliven lessons but to increase the knowledge of and respect for other cultures represented in Britain.

There is a second side to a multicultural approach to school mathematics, and that is multicultural inputs into certain topics in the mathematics curriculum. Only a brief indication of how this can be achieved in three areas is given below.

Counting and measuring are the first and probably the most useful activity that we are introduced to in schools. Yet to know how to count does not mean being able to manipulate the numbers one counts with. Fingers—the most accessible of abacuses—lend themselves easily to the creation of different counting systems. One can move, using each hand, from counting finger tips (1 to 5) to counting finger joints (1 to 15) to a still more complex

system used in China where the three faces of each finger at each of the finger joints can represent numbers one to nine. If in addition, with the Chinese system, each successive finger indicates increasing power of 10, a hand offers a highly economical way of representing numbers up to 100,000. A comparative study of different methods of counting and the numerical systems that have grown up to accommodate them could lead to a greater understanding of our own system.

To illustrate, the Mayas of South America developed a positional system even more concise than our own by using only three symbols—a dot, a dash and a shell shape to represent 1's and 5's and 0's respectively. This system was in use for over 1,000 years before the Hindu-Arabic numerals had arrived in Europe to gradually replace the cumbersome graphic system of the Romans.

The Mayan system had other interesting features. Numbers higher than 20 were written in columns to be read from bottom to top. So that 186, for example, would be written as 18 in the top row to represent 9 sets of 20 and 6 in the bottom row representing 6.

Compared to the Roman way of writing this number (CLXXXVI), it is clear that the Mayan system was less cumbersome and more efficient in arithmetical manipulation, but was incapable of achieving the enormous efficiency obtained by the place value conventions of our numerical system. A useful exercise would be to carry out a comparison between different numerical systems taking the Mayan system as a point of reference.

A second example Vedic mathematics is particularly relevant these days with the increasing use of calculators in schools. The tedious associated with numerical computations is becoming less important, but coming to the fore is the need for greater conceptual understanding of the "shapes" and patterns of numbers.

The Vedas are among the oldest scriptural writings in the world, dating back about 4,000 years. They contain not only instructions and guidance in religious or spiritual matters but discourses on subjects such as medicine, diet, handicrafts and mathematics. Shankaracharya of Govardhana who provided commentaries on the 16 sections (or *suras*) of mathematical

aphorisms claimed that the Vedic methods not only reduce the period taken to acquire basic mathematical skills but are an easier and more enjoyable way of learning mathematics, particularly for school children of average ability.

A detailed exposition of Vedic mathematics is not possible here. But if one concentrates on arithmetic, the underlying rationale of Vedic methods is first to discover the rhythmic patterns and individual shapes of the nine natural numbers, and then use the "visual" pictures to carry out quite complicated arithmetical operations. Considerable emphasis is placed on the ability to carry out these operations mentally and devise short cuts to lessen the load of calculations. The use of binomial expansions for squaring, cubing and multiplying large numbers is a case in point. From personal teaching experience, the quality of "magic" that surrounds Vedic methods can bring to a number of children a satisfaction in achievement and a more profound sense of numbers.

A third and final example of multicultural input into school mathematics is the use of geometrical art designs

from different cultures. There is a cogent reason for having a geometrical component in school mathematics. In work situations (eg laying out, dress designing, day-to-day activities) and in the appreciation of physical environment, awareness of spatial relations are important. Further, in essential elements of mathematics, symmetry, translation, pattern, and equivalence can be conceived exploring different designs, structures with simple rangoli patterns—decorations during festive days in number of Hindu and Sikh households—and moving on to Islamic art designs which provide more varied and complex illustrations, including a multiplicity of geometrical shapes with their properties. African artwork patterns found in designs on wood and metal among different groups, could provide a useful introduction to a history subject.

Dr G Joseph is a lecturer in the Department of Economics and Social Sciences at the University of Manchester.

A matter of principles

Peter Kaner explains how he developed the Integrated Mathematics Scheme

The unique features of MMCP, to my mind the MMCP project had three remarkable properties which made it interesting. These were:

- The use of the teacher as a curriculum development writer and originator. The whole project was based on this principle.
- The emphasis on the relationship between mathematical ideas and the infinitely interesting world of nature and of human activity. Mutually complementary, these aspects were presented in a way to enhance experience for less academic children.
- The particular emphasis given to the appearance of the materials; its visuals and design from both a functional, pedagogic standpoint and from the points of view of providing visually satisfying materials for children.

To understand the problems confronting a professional writer of mathematics books it is necessary to realize that mathematics education is a response to social and economic forces as well as a simple wish to pass on our own culture to the next generation. In British current mathematics

education there are considerable pressures for change. We have had the Cockcroft and Munn and Dunning reports from government committees which have taken a careful look at mathematics in secondary schools; we have had a reaction against the excesses of modernization and we are now commencing a restructuring of our examination system at 16 years. In addition, there are the phenomena of a declining school population, unemployment and the challenging growth of technical and vocational education. On top of all this, there are profound changes—that are to be produced by the calculator and computer. It takes nerve to commit oneself to writing at a time like this as many questions are unanswered and challenges unresolved, but it is clear from the wide response to my new materials that teachers expect someone to undertake this work on their behalf.

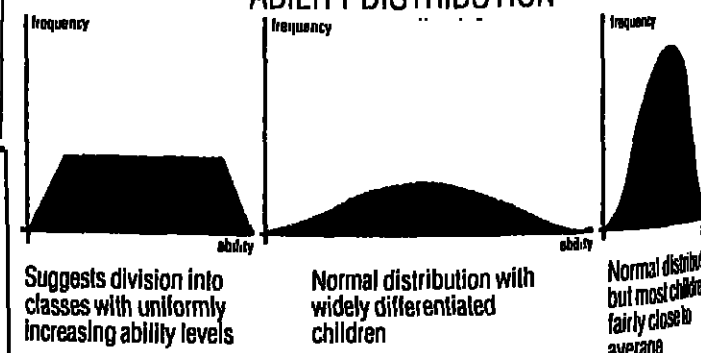
In writing for a wide ability range of children one has to take a view of how these abilities are really distributed. The combined data which result from mathematical testing can tell a great deal more about tests than about the

realities of intelligence. Children have a disconcerting habit of contradicting the statistical predictions on an individual basis which makes one wonder about the underlying intelligence of all human beings. It is obvious that children (and adults) display totally disproportionate amounts of intelligence in different activities. For example, the worst academic performer in my school turned out to be the best business man of us all, and it is hardly surprising that, apart from extremes, we cannot predict ability of performance with any real confidence. One's choices, therefore, become a matter of selecting a model that corresponds to one's convictions and trying to reduce the dependence of one's material on the model chosen because it is bound to be uncertain.

The visual representation of size models is shown in the diagram. Even if one accepts some sort of a normal distribution of ability, it is still possible to make different choices for materials and it is important to realize that such choices are not based on knowledge but rather on preference. The purpose of writing IMS, however, I chose the typical "average" using majority for the basis of my position of material, with the following limitations in mind.

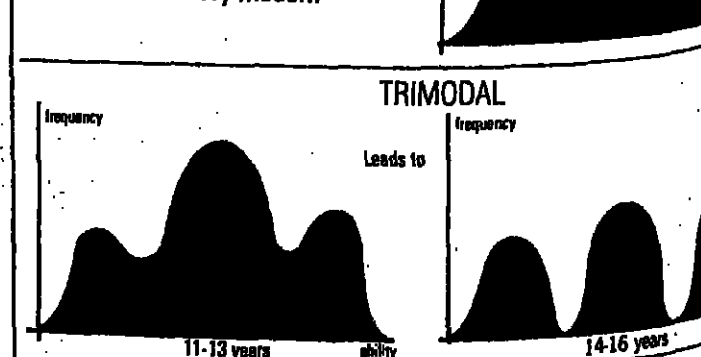
- The material should be based on a model that children do not become constrained by a model of material, which is based on an estimate of their ability.
- All children should be encouraged to see themselves as having high potential.
- It should be a very simple model for interested pupils to be able to more challenging material.
- The extremes should have special attention within the scheme.
- The choice of organization in school should have the minimum possible effect on the content.

SOME MODELS OF ABILITY DISTRIBUTION

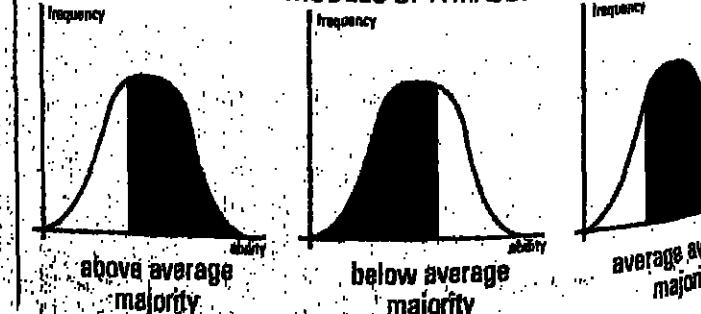


BIMODAL

Two different sorts of children. This model justifies having two levels of school, eg Grammar and Secondary Modern



MODELS OF A MAJORITY



A matter of principles *continued*

Early decisions: Having decided to develop a new mathematics scheme, I had to take a number of decisions early on. The material would have to make its own way commercially as public funds can no longer be found for large curriculum development projects (except in certain fields such as microcomputing), so the first important decision was that I had to leave my job as a London inspector and to survive by haison with a publisher. This proved possible. I also decided to write all the material myself, with the exception of the material for specially gifted children. This decision was based on two important factors. First, committee decisions are always compromises and usually the most exciting innovations have to be dropped and second, my experience in writing was probably much greater than could be found in any teacher willing to join a team. I also believe that a textbook can establish a relationship between the writer and the students using it and that they will benefit from continuity and consistency of writing style. The material for gifted children was written by the distinguished mathematics author and educator, W W Sawyer, who has a worldwide reputation and produced an outstanding collection of problems for these particular students.

The next decision was to determine the degree to which the electronic calculator should be an integral part of the scheme. Although some people were hesitant in 1979, I decided to emphasize calculator use from the age of 11 at the expense of training in traditional arithmetical skills, leaving it to teachers to redress the balance if they thought it was necessary. My chief motivation for this was to allow children to make a clean break from any arithmetical failure in the primary school and to give them straight away the precision calculating tool to use in school mathematics and in other subjects as much as possible. Fortunately my point of view was partially supported by the Cockcroft Report and was soon to be strongly supported by the evidence of the children's morale on using IMS.

The next decision involved the structure and organisation of materials in

the course. You might think it curious that this decision came before the next, which is about the actual curriculum content. On reflection, however, it is clear that the professional textbook writer's task is as content is concerned. The content is set by public bodies such as examination boards, university entrance requirements, etc. to quite a large extent, and on these grounds the demands of the market must be fulfilled or the publication is bound to fail. I decided to produce a structure that reduced to a minimum the effect of organizational variations in schools. Thus the materials should fit mixed ability teaching as well as setting and broad band streaming, and should have sufficient flexibility to allow schools to change their modes of organization without disrupting learning objectives.

Content of the mathematics curriculum came next, and my decision was to attempt to blend traditional and modern mathematics in a way that would preserve the concrete, applied mathematics most easily appreciated by average pupils, while still keeping some emphasis on abstraction and structure which are the essence of contemporary mathematical activity. The materials should also stimulate the spirit of enquiry in all pupils and build confidence in the mathematical way of thinking as a realistic problem-solving strategy. These are very high-sounding ideas which are not easy to achieve, as any of the reforming mathematics projects would have to admit.

The exact nature of the IMS materials and the response so far are clear consequences of the early decisions taken in 1979. In many ways, a committee of mathematics educators could have taken the same approach, but they would have taken a lot longer to arrive. It is of interest that the time scale of the Cockcroft Committee's deliberations coincided with my writing timetable, so that Bell & Hyman, our publishers, were able to launch a post-Cockcroft Mathematics Scheme about one month after the publication of the Cockcroft Report.

This article is part of a lecture given by Peter Kaner at the Max Planck Research Institute, Berlin, on July 3, 1984. Further information about IMS can be obtained from the publishers, Bell & Hyman Ltd.

Viewing-doing and doing-viewing

Review by David Kent

How often do we condemn the role played by television in the lives of our children, appalled, perhaps, by their ability to mindlessly watch whatever happens to be on? It is also the case that television can offer children a range of experiences which would ordinarily be well out of their reach. As such it must have some considerable educational value.

David Womack has produced a report of his findings while he was the holder of an IBA Research Fellowship at the Department of Education, University of Manchester. The aim of the research was to examine the role of television in the gaining of early mathematical concepts, particularly for slow learning children. The report makes some comments on the effectiveness of the television as a mathematics teaching resource, which should prove to be of value to programme producers, classroom teachers and general educators.

Mr Womack is quite right in pointing out that the evaluation of the effectiveness of teaching through the medium of television is part of a larger problem. Namely the one of how we assess and measure the effectiveness of any classroom teaching, and of the difficulties in constructing adequate research frameworks in education. But it would be wrong to dwell on this issue in such a short review.

The report is written in four parts, the third of which is the one that may be of most value to practising teachers. In this part, Mr Womack compares the effectiveness of two different classroom uses of mathematics television programmes. He defines the first as "Viewing-Doing" in which the teacher's lesson is a follow-up to the television programme. The other mode he defines as "Doing-Viewing"

where the television programme is used as a supplement to follow a prepared lesson.

It is the former, "Viewing-Doing" which proves to be the more conventional use of television in primary schools. However, according to Mr Womack's inquiry, admittedly a small scale investigation, it is the latter or "Doing-Viewing" which seems to lead to more effective learning. Mr Womack argues that this may be because the children's habitual viewing is of an undemanding nature and this creates an attitude or expectation which they bring to school viewing. They have a generally different attitude towards a teacher demonstration, for this usually demands that there will be some action on the part of the children.

The growth of the video recorder makes "Doing-Viewing" more realistic these days. Also Mr Womack's findings suggest the need for more television programmes designed as follow-ups to teacher generated lessons.

Part one of the report deals with the primary television mathematics programmes available during 1980-81. As well as providing a brief description and appraisal of each of the five series 1, 2, 3, 4, 5, *Go My World; Maths in a Box; Leapfrog and It's Maths*, there are some rather nice, volunteered comments from teachers and children.

The second part of the report is concerned with the views of teachers on the mathematics programmes. These were obtained through questionnaires and have been presented in a very easy to read, tabular form. There are many interesting results and comments, not the least being the one that summarizes the reasons for not viewing a mathematics series. For continued

EXTRA

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by ROBERT GLEN
Head of Maths, Whitehill School, Glasgow.

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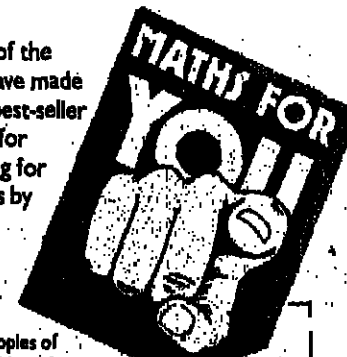
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Viewing-doing and doing-viewing

many it is the usual problems associated with organization. The whole report has a particular reference to slower learning children. It is thus fitting that a good proportion of the final part—a conclusion—relates to such children and their needs. However, there are some useful comments made by Mr Womack which should act as reminders to all. Perhaps the most important for me is his view that television is *least effective* when it attempts to do what can be done better by the teacher in the classroom. This remark has implications extending well beyond television into all aspects of modern technology. I am thinking here of videos, tape recorders, calculators and particularly computers. I would like to think that there will be an increasing amount of research into the most effective uses of all such hardware.

David Womack's report is hardly likely to become bedtime reading for the rank and file of the teaching profession. But that is not a criticism of either the report or the teachers. Those who do care to invest their time in it will find the report quite readable. The statistics are easily presented or placed in appendices and there are many comments, opinions and conclusions of value.

Perhaps the true worth of this report will be measured in terms of what other research it provokes into the most effective use of television (and other technology), and in the help it might provide the producers of programmes.

*Maths on Television: Doing or Viewing? obtainable from Fellowship Office, IBA, 70 Brompton Road, London SW3 1EY.

In September 1982, the panel of the Cambridge Area Heads of Mathematics Departments voiced a determination that the recommendations of the Cockcroft Report about the teaching of low attainers in mathematics should be put into operation in their own schools.

They started by searching out schemes which were in operation in other I.e.s.s. The Hertfordshire Achievement Scheme seemed to coincide most closely with the needs of Cambridgeshire; although it pre-dated the publication of the Cockcroft Report, it emphasized the importance of *success and motivation* for low attaining pupils. If pupils are given tasks which show what they can do, rather than what they cannot do, they then gain a new confidence in their own abilities. Furthermore, when those pupils begin to experience success, it gives their teachers fresh confidence to try different ideas and to experiment with new teaching styles.

As a result of this investigation, a subcommittee, known as LAMB (Low Attainers in Maths Body), decided to devise a local achievement scheme. It would emphasize the importance of success and motivation, and its syllabus would be based on the foundation list laid out in the Cockcroft Report. It was also intended that other Cockcroft recommendations should be put into action with low attaining pupils. These included an increased use of practical, mental and investigational work. LAMB linked the areas of mathematics teaching which they wished to emphasize to testing structures, and decided to devise a set of achievement tests under the following headings:

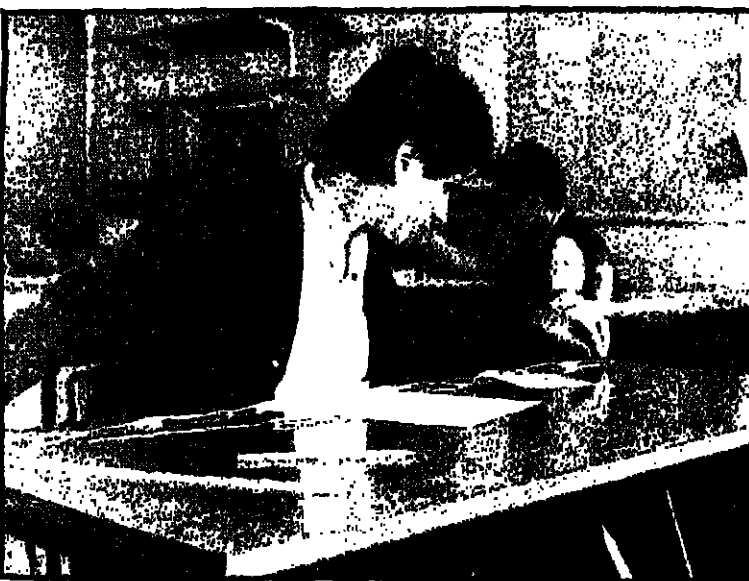
- Foundation mathematics
- Mental arithmetic
- Calculator skills
- Practical skills
- Work units

In late 1982, LAMB began devising syllabuses and developing tests for the Cambridgeshire Mathematics Achievement Scheme (CMAS). Further details of these tests are:

Foundation mathematics: The foundation mathematics syllabus was based on the Cockcroft foundation list, and is

Firefighting in Cambridgeshire

A mathematics scheme for low-achievers by Sue Hill, Mike Cullen and Hilary Shuard



assessed by means of written tests. The foundation list has been split into four levels, labelled A, B, C and D (A is the easiest). For pupils to succeed at a particular level, they must achieve scores of 75 per cent or more in three different tests on different occasions. Each test can easily be completed within a single mathematics period. Mental arithmetic: Two levels have so far been set up. Level 1 is based on the work included in Levels A and B of foundation mathematics, while Level 2 mental arithmetic is based on Levels C and D. Again, a pupil must obtain 75 per cent on three different tests. Each test takes approximately ten minutes. Calculator skills: This section has a similar format to that of mental arithmetic. Levels 1 and 2 are assessed by written tests which require the pupil to use a calculator to work out the answers. Again, a single period is sufficient for each test. Practical skills: Two levels have been constructed. There was little previous experience or research available which would have enabled practical skills to be graded in order of difficulty. Hence, it was arbitrarily decided that each task set at Level 1 should embody a single skill. Level 2 tasks require the pupil to use a composite of several single skills. The single skills tested at Level 1 include counting, weighing, measuring, reading tables and estimation. For example, the Level 1 weighing task is:

1. Use the balance (no weights are provided) to find which is the heaviest of five containers which are similar in appearance.

2. Place the containers in order of weight from heaviest to lightest (the balance is still available).

3. Weigh one of the containers on the kitchen scales.

4. Weigh a suitcase (roughly 20 kg) on the bathroom scales.

To pass the Level 1 practical test, a pupil has to complete all the tasks in that test within an acceptable degree of accuracy.

Work Units: These projects are designed to show that a pupil has worked at an extended piece of mathematics for approximately 15 hours. The mathematical standard of this part of the pupil's work is less important than the effort and continued commitment that the pupil shows. It is intended that the investigations, problem-solving and application to everyday situations which each pupil should undertake (see Cockcroft para. 243) will be incorporated into work units.

The certificate which will be awarded to successful pupils has been endorsed by Cambridgeshire Education Authority and consultations with local employers are under way. The minimum requirements for the award of a certificate are passes in all four of the following: Level A in foundation mathematics; Level 1 in mental arithmetic; Level 1 in practical skills; Level 1 in calculator skills, together with the

completion of two work units. Tests can be taken at any time during the fourth and fifth years, and a pupil who is unsuccessful at passing a level may take further tests at that level.

Further Work: The local Mathematics Inspector, Mr R J Stone, made it possible for two members of LAMB to be seconded to Homerton College as teacher associates for the 1983/84 academic year. The aim of the associations was both to support the CMAS and to investigate other local and national initiatives concerned with low attainers in mathematics, so that this knowledge could be directed in supporting the local scheme.

Sue Hill and Mike Cullen were selected to take up the associations. Their first task was to visit all heads of mathematics departments in Cambridgeshire, and to seek out schools in which "good practice" was already in existence. The results of this survey were not very encouraging, but made clear the directions in which work was needed.



Few departments yet had enough suitable material and resources; many teachers realized that these pupils needed a more practical style of work in mathematics, but as well as needing more suitable resources, lack of confidence, the difficulty of changing an established teaching style, and the fear of disruptive behaviour when pupils were not sitting at their desks resulted in many pupils either being given a watered-down academic curriculum or subjected to a diet made up solely of the practice of arithmetical skills.

The next step was to try to help colleagues develop their teaching methods. Five approaches were used. Practical skills: To help teachers administer the practical tests in the classroom, suggestions were made about how pupils could carry out the practical skills tasks. It was found that the best arrangement was for an indi-

vidual pupil to work on the task which needed little teacher action, at the side of the room, with the teacher and the other pupils watching this style of organization, and produced which showed a four-pupil from a bottom set working on the tasks; the teacher was able to help accustom pupils to the practical tests, the associates advised a "circuit" of tasks which could be used by a whole class; it was expected that this circuit would help teachers to introduce the practical skills.

Individual work for Foundation Mathematics: The local mathematics levels are arranged so that pupils can develop at their own rates, and so individual or group teaching needs to be used for a variety of reasons. A small number of pupils may only gain a Level A before they leave school, whereas the top end of the ability range of attainers' some pupils will be able to complete Level D. Pupils are placed in low mathematics sets for a variety of reasons, not all of which are based on very low ability; if a pupil becomes motivated and shows an ability to progress to external examinations, then it is hoped that in the CMAS will be able to extend their upwards.

Group work on Work Units: There is no necessity for work units to be done by individuals working alone. The teacher decides that group work is better for the pupils, then it is acceptable and can be encouraged within the CMAS framework. It suggested that a work diary should be kept, to show the contribution of each member to the group.

In-service work: Eight more Cambridge Area schools will join the scheme in 1984/85, and 1985/86. Some have been arranged to receive visits to teachers who are using the scheme both the structure of the approach and the different ways in which it is used.

The Resource List: An annotated list of books and other resources for the teaching of low attainers has been drawn up for circulation to schools, and a number have been made available in the "LAMB Library", so that teachers may use a central collection of resources in Cambridge Teachers' Centres.

The Future: Much still remains to be done. More development is needed to complete the basic structure of the assessment tests and work units. This work is continuing in 1985/86 when another associate, Jane Dore (Comberton Village College), is seconded to continue the work started by Sue Hill and Mike Cullen.

They return to their schools. CMAS and LAMB came into being as a result of a grass roots movement among local teachers, and soon the scheme will have grown so that almost all secondary schools in the Cambridgeshire area are taking part. The first batch of CMAS certificates will come out of the job market in 1985, and it is necessary that local employers should understand and become committed to the scheme. This work will be taken during this coming year.

A major problem still lies ahead for teachers to build their confidence that they can move over to a more practical style of teaching. In the past, the difficulty of changing an established teaching style, and the fear of disruptive behaviour when pupils were not sitting at their desks resulted in many pupils either being given a watered-down academic curriculum or subjected to a diet made up solely of the practice of arithmetical skills.

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Possible pitfalls in being too practical

David Bell questions the assumption that activity equals learning

A cursory glance at the most recent primary mathematics schemes would demonstrate a move away from a computation based approach to a more mathematical or "practical" approach. Some schemes now boast proudly that the basic concepts are taught from a mathematical base, although precisely what this means is not always clear. The only large group of schools that maintain a formal, computation based approach are the private prep schools and for some of them have come under fire from the Inspectorate.

Yet, there is a need to examine some of the grander claims of this "new" method, for many schemes are almost totally based on so-called "practical" activities, and it could be that this has happened without any real justification beyond an ill-defined view that this is somehow more relevant. To do this is not to defend a perpetual round of number crunching, but to examine whether the mathematical education of primary children is fulfilling the expectations many people now have of it.

Most of the more modern schemes have widened the scope of the work covered, moving right across the whole field of mathematical knowledge. On the surface, a lot of activity is involved, the intellectual justification often being provided by the work of Piaget and more recent psychological research. Children will now cover a whole range of activities in shape, involving some highly complex geometrical concepts. Measurement, too, is seen to provide many opportunities for children to pursue their own discoveries of space and time. Even algebraic ideas are introduced quite early on. The perfect primary classroom nowadays would seem to be full of children busily involved in the development of their mathematical understanding.

Yet, at the heart of all this emphasis on practical activities seems to be a confusion. It is quite clear that practical activities are absolutely vital in developing the ideas of number in infant school children. So the ubiquitous unit blocks are manipulated a number of ways, in a whole variety of situations to teach all the main operations of number. It is only after this has been done, that children will formulate their understanding on paper. However, this approach has been taken and applied across the whole field of mathematical activities with the underlying assumption, activity equals learning.

However, the degree of abstraction is considerably greater. Take shape as an example. Some of the building and collapsing of shapes involves a degree of mental agility that not all adults possess. Certainly, there is plenty of activity but very often the underlying concepts are found to be well beyond the average children. The same is true of some of the more esoteric activities in measurement, which on the surface look good because there is much hustle and bustle with weights, scales and metre sticks. The related point is the criticism frequently made of having to do pages and pages of sums. Doing a whole lot of activities might look good, but very often it is no more than a whole lot of repetitious tasks. This is highly questionable, and an already crowded curriculum, and just as pages of sums become ends in themselves, much of the work that passes as practical mathematics is open to the same criticism.

Quite clearly then, there is a need to redefine a functional mathematics programme for the primary curriculum. This should not be confined to the place of mathematics via a visit other subjects, but should also include an examination of its internal content. The demand for practical activities would seem to have led up a blind alley. There has to be a re-think of

what actually constitutes a practical activity based on the work done in infant schools, rather than the pseudo-mathematics of the junior school. Fundamental to this would seem to be a restatement of the unfashionable view that arithmetical concepts remain central and are infinitely more valuable to primary school children than abstract mathematics. Before the accusation of obscurantism is hurled, it is necessary to repeat that this will be in the context of practical applications of number, using these to relate, as far as possible, to day-to-day activities. Naturally, this will involve even greater emphasis on the language of number. If this degenerates into pages of sums, then it is useless, as a quick check on the understanding children have of place value will prove.

Greater use has to be made of problems and problem-solving situations, involving money and time, the greatest use of which we put our



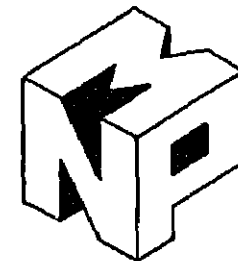
understanding of number. Calculators too, have to be taken more widely on board as a useful tool. This should be the emphasis rather than unnatural mathematical games. Weight, height, length, shape etc. will all have their place in the context of needing to know, without fooling people into believing that they are central to mathematical education.

The effect of all this would be to reduce the amount of time spent on mathematics and arithmetic. Yet, even the Inspectorate say that that would be no bad thing. This leads on to the implications for mathematics, via a visit other areas of the curriculum. It might be a controversial point, but it probably would be worthwhile to devote some of the "excess" time to science and technology, provided that it too was not based on a whole lot of abstract and irrelevant ideas. Although the subject here is mathematics, it does illustrate the need for a radical re-think of the primary curriculum. To use "modern" models might not be as appealing as first thought, if events in wider society have overtaken the designers of such models. It is this which makes primary education such a frustrating, but ultimately exhilarating area to work on and it is up to the mathematicians to face the new challenge.

David Bell is a teacher at Culbertson Primary School, Glasgow

EXTRA

The NATIONAL MATHEMATICS PROJECT



MEMO TO: All Heads of Mathematics

FROM: Addison-Wesley Publishers

Changing your mathematics scheme involves major decision-making, and you need to be fully informed about the choices available. Addison-Wesley would therefore like to announce the forthcoming publication of *The National Mathematics Project*, starting in September 1985.

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recommendations of the equally influential Cockcroft Report, and is likely to have a similarly far-reaching effect on secondary mathematics curriculum development.

Over the next twelve months leading up to publication, Addison-Wesley will be issuing a series of newsletters designed to keep you up-to-date with *The National Mathematics Project* and to explain the key features which make it the most exciting development in secondary mathematics teaching for many years.

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NELSON JAMES SCHOOL
Nelson Road, Whitton,
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ESTABLISHED TEACHER
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Plus £645 Outer London
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An enthusiastic primary
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Forms and further details (Incluscap s.a.s.) from Director of Education, Royal House, London Road, Twickenham TW1 3QB, returnable to the Head.

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EDUCATION COMMITTEE
17, THE BARN, WIMBORNE, DORSET
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Cedar Road, Coltham, Surrey
Required January 1985, a
thrustwise and conscientious
Single One class teacher.
Interest in Boys Games &
Craft, Design and Technology
is an advantage. The
school is committed to the
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Application Forms to
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Office, Tel: Weybridge 5281

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Primary teachers are needed to work overseas.
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CITY OF WAKEFIELD
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NURSERY
N.O.O.80 part-time
Required as soon as possible
a Scala teacher, Nursery
peripatetic/trained preferably
with a 1st or 2nd form ap-
plicable receipt of a s.d.
Education Officer Office
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Rond Street, Wakefield, Ws1
2 1JG

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AN EQUAL OPPORTUNITY
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DOWNSHILL INFANT
SCHOOL
 Downhill Road, London E
 Head: Miss S. Brodie
REQUIRED FOR JANUARY
 Infant teacher initially
 required for Reception Class
 to operate on a 20 sch.
 Commitment to co-operate
 teaching essential.
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 Application form available
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Halo End Rontl, London E
Ad Head: Mr C.L. Fowling
REQUIRED **1944**
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Intenla, CLASS TEACHER
initially for Lower Jnion
Two (ivly), enthual
members of staff are ac
who have a keen intenal
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riculum. Positive attitude
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Application form
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Head teacher.
Closing date: 19th Oct
1984. Ref. P.62/1
(93044) 110

(Group 5, 280 on roll)
Required January 1985 en-
slastic Scale Teacher
Juniors preferably should
enlist with sports. This
is to replace a teacher
leaving school for a
lesser scheme and is, there-
fore, for a registered un-
employed teacher or a col-
lege teacher in agree-
ment should not apply. As
applicant is applying as a
teacher, a person with a
disabled worker should be
recruited but this should
deter other unemployed
persons from applying.
Form and details
Send, s.s.s., please. (233)



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CLAYMONT HIGI (MIXED)
5, CHILPO
Claymont Avenue, Kenton,
Harrow HA3 6JH
A Comprehensive of 1,100
pupils, (220 in 6th Form) in a
pleasant residential area.
Reopened from January 1985
to offer **ECONOMICS** and
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following course: Typewrit-
ing, Office Practice, Com-
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Direct to all levels.

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able to relate effectively to difficult pupils and work on their own initiative in providing a stimulating educational programme.

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INDEPENDENT
EDUCATION

GLoucester
DEAN CLOSE SCHOOL
H.M.C., 230 pupils, 13-18
Co-educational boarding and day
Boys' section in 1985 an
Assistant CLASSICIST
Applications in the form of a
letter with curriculum vitae
and names and addresses of
two referees should be sent
to the Headmaster, Dean Close
School, Cheltenham, Glos.
Further particulars may be
obtained. The school has
its own salary scale. (38142) 181624

Computer Studies

Heads of Department

BRISTOL
BRISTOL GRAMMAR
SCHOOL
Independent, Co-educational,
1,000 pupils (11-18)
Head of DEPARTMENT OF
COMPUTER STUDIES
Required for January 1985 an
experienced and enthusiastic
graduate, preferably with a
commercial/industrial back-
ground, to take charge of
computing within the school.
Current courses include O-
level 'A' level, the Sixth
Form, and general literacy
courses. A thriving computer
club is already in existence,
and there is considerable
scope for lateral thinking
and CAL.
The school has a range of
microcomputer hardware, and
plans are afoot to extend this
to the completion of a new
computer room early in 1985.
Salary Burnham Scale 35.
Willingness to assist with
games and/or extra-curricular
activities welcomed.
Applications with c.v. and
details of 3 referees to the
Headmaster, Bristol Grammar
School, Bristol B8 1SR. Tel:
Bristol (01274) 736006.
(38132) 182018

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Technology

Other Assistants

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PENRHOS COLLEGE
Colwyn Bay
Independent Boarding and
Day School
O.S.A., 300 girls
CRAFT, DESIGN AND
TECHNOLOGY
Dynamic teacher re-
quired to develop this de-
partment virtually from
scratch. An appointment
is required to the
department in which the
design and equipment, the
ideal candidate will be
young, interested and wil-
ling to work with the
programme, able to co-
operate actively with other
departments, willing to
teach to O level,
and will be resident.
Letter of application,
curriculum vitae and names
of two referees to the
Headmaster, Penrhos Col-
lege, Colwyn Bay, Gwynedd,
LL58 4DA. (30537) 182134

Economics

Other Assistants

BERKSHIRE

HEATHFIELD SCHOOL
Ascot, Berkshire
Independent boarding
school for 175 girls
Requires for 1st January
an excellent teacher of
economics to take a popu-
lar subject to O and A-
level in the 5th form.
Terms of the post are
flexible depending on
seniority and experience;
the position can be resi-
dent or non-resident and
part-time would be con-
sidered.
Applications with c.v.
and names and addresses
of two referees to Head-
mistress. (30167) 182924

BIRMINGHAM

**EDBASTON CHURCH OF
ENGLAND COLLEGE FOR
GIRLS**
31 Edgbaston Road,
Birmingham B15 1RX
Required for January 1985
an experienced and enthusias-
tic graduate to teach
Economics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curriculum
vitae and details of 3 referees
to be sent to the Head-
mistress, Edbaston Church
of England College for Girls,
31 Edgbaston Road, Bir-
mingham B15 1RX. (38142) 182424

English

Heads of Department

BEDFORD

Due to retirement there
will be a vacancy for a
HEAD OF THE ENGLISH
DEPARTMENT from
September 1985.
The successful applicant
will be required to teach
up to University entrance
and to organise and co-
ordinate the teaching of
English throughout the
school. OCE English
Department and Literature
are organised on a Mode
III basis.
There are five other
members of the depart-
ment and a strong tradi-
tion of scholastic attain-
ment.
Full details may be
obtained from the Head-
master, Bedford School,
Bedford Road, Bedford
MK40 3TD to whom ap-
plications should be made
together with details of
qualifications and experi-
ence and the names of
three referees. (43512) 182418

Other Assistants

ARGENTINA

NORTLANDS SCHOOL
Buenos Aires
See overseas section.
(30552) 182424

KELLY COLLEGE
TAVISTOCK

HEAD

Applications are invited for this post which
will become vacant on 1st September 1985. There
have been extensive developments during recent
years. The School is mainly boarding with
approximately 230 boys and 65 Sixth Form girls. A
new Headmaster's House was built in 1980.

Further particulars can be obtained from the

Clerk to the Governors
70/72 North Hill, Plymouth, PL4 8HH.

The final date for applications is 3rd November,
1984.

BEDFORD

MODERN SCHOOL
Independent, H.M.C.,
130 boys, 7-18 years
Required for January 1985, a
well qualified graduate
teacher of English. Teaching
will be across the whole age
range including O, A and
possibly University Entry
level.
Help with extra-curricular
activities, particularly drama,
canoeing and sailing. The
Award Scheme would be an
asset. Curricular and extra-
curricular activities should be
planned. University Entry
level.
Salary negotiable on the
Burnham Scale, but unlikely
to exceed Scale 2. Help with
school fees. There is a medi-
cal insurance scheme. Removal
expenses paid.
Please apply with the
names of two referees to the
Headmaster, Bedford Modern
School, Market Lane, Bed-
ford MK41 1JY, or to the
Principal, (38124) 182424

GATESHEAD

JEWISH BOYS SCHOOL
17 Gladstone Terrace,
Gateshead NE8 4HT
Required for as soon as possi-
ble a full-time teacher with
experience in teaching and
experience in teaching English
to O level and A level.
Full or part-time.
Apply in writing to the
Principal. (38191) 182424

Geography

Heads of Department

BIRKENHEAD

BIRKENHEAD HIGH
SCHOOL
C/O Debenhams Place,
Birkenhead L43 1TY
Required for JANUARY
1985 a Graduate Teacher of
GEOGRAPHY, Scale 3.
Good facilities.
Please apply direct to the
Head Mistress with
names and addresses of
two referees and details of
qualifications and experi-
ence. (30564) 182418

Other Assistants

LONDON

**ST. LAWRENCE SCHOOL FOR
GIRLS**
Queen's Road, Wimbledon,
London SW15
Required for November, suit-
ably qualified and experienced
teacher of Geography to O-
level. Part-time post, 0.61.
Salary Scale 1. The school
has a strong tradition of
achievement in Geography.
Apply in own handwriting
to the Principal with C.V. and
names and addresses of two
referees. (30578) 182424

SURREY

**ST. CATHERINE'S
SCHOOL**
Dorking, Surrey
Required for January
1985, a part-time graduate
teacher of GEOGRAPHY to
teach mainly 11 to 14 year
olds, with some OCE
work. The school has a
strong tradition of achieve-
ment in Geography. The
position is full-time, with
the possibility of becoming
permanent post in
September.
Please apply in writing to
the Headmaster with C.V.
and names and addresses of
two referees. (30578) 182424

Other Assistants

NORTLANDS SCHOOL

See overseas section.
(30552) 182424

MALVERN GIRLS' COLLEGE

DEPUTY HEAD

The College Council invites applications for the post of
Deputy Head which will become vacant on September 1st
1985, on the retirement of the present holder.

This is a Group 9 Independent Boarding School for 520 Girls
aged 11-18, of whom about 65 are Day Boarders. Some
residential experience is desirable but the successful ap-
plicant will not be expected to be resident. Applicants
should be practising Christians.

Applications, together with full curriculum vitae and
addresses of two referees, should be sent to:

The Headmistress,
Malvern Girls' College,
Avenue Road,
Malvern,
WR14 3BA.

Closing date for applications - October, 19th 1984.

Home Economics

Other Assistants

SURREY

**KING EDWARD'S
SCHOOL**
Witley (near Godalming)
(HMC - Co-educational,
boarding; 520 pupils 11-
18)
Vacancy in January 1985
for qualified teacher in
Food & Nutrition, Scale 1.
Capable of O and A level
work. The school has a
strong tradition of achieve-
ment in Home Economics.
Apply in writing to the
Headmaster, King Edward's
School, Witley, Surrey
GU24 0BB. (30564) 182424

Mathematics

Other Assistants

BRADFORD

BRADFORD GRAMMAR
SCHOOL
Schoold Road, Bradford BD9
4JP
There will be a vacancy in
January 1985 for a well-
qualified teacher of Mathe-
matics to O level and A
level. The school has a
strong tradition of achieve-
ment in Mathematics. The
post is full-time, with full
curriculum vitae and details
of 3 referees to be sent to
the Headmaster, Bradford
Grammar School, Schoold
Road, Bradford BD9 4JP.
(38142) 182424

SURREY

EVELL CASTLE SCHOOL
Church Street, Ewell,
Surrey
(370 boys, Girls in 6th
Form)
Required in January or
August if possible, a
graduate teacher of Mathe-
matics to O level and A
level, and preferably able
to teach to University en-
trance level. The school
has a strong tradition of
achievement in Mathe-
matics. The post is full-
time, with full curriculum
vitae and details of 3 re-
ferees to be sent to the
Headmaster, Evell Castle
School, Church Street, Ewell,
Surrey. (30578) 182424

BRISTOL

BRISTOL GRAMMAR
SCHOOL
Independent, Co-educational,
1,000 pupils (11-18)
Mathematics
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Bristol Gram-
mar School, Bristol B8 1SR.
(38142) 182424

Other Assistants

SURREY

**ST. CATHERINE'S
SCHOOL**
Dorking, Surrey
Required for January
1985, a part-time graduate
teacher of GEOGRAPHY to
teach mainly 11 to 14 year
olds, with some OCE
work. The school has a
strong tradition of achieve-
ment in Geography. The
position is full-time, with
the possibility of becoming
permanent post in
September.
Please apply in writing to
the Headmaster with C.V.
and names and addresses of
two referees. (30578) 182424

Other Assistants

NORTLANDS SCHOOL

See overseas section.
(30552) 182424

MALVERN GIRLS' COLLEGE

DEPUTY HEAD

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Deputy Head which will become vacant on September 1st
1985, on the retirement of the present holder.

This is a Group 9 Independent Boarding School for 520 Girls
aged 11-18, of whom about 65 are Day Boarders. Some
residential experience is desirable but the successful ap-
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should be practising Christians.

Applications, together with full curriculum vitae and
addresses of two referees, should be sent to:

The Headmistress,
Malvern Girls' College,
Avenue Road,
Malvern,
WR14 3BA.

Closing date for applications - October, 19th 1984.

HEREFORD
AND WORCESTER

MALVERN COLLEGE
Required for September 1985
or good temporary graduate
to teach Mathematics to O
level and A level. The school
has a strong tradition of
achievement in Mathe-
matics. The post is full-
time, with full curriculum
vitae and details of 3 re-
ferees to be sent to the
Headmaster, Malvern Col-
lege, Malvern, Worces-
tershire WR14 3BA. (38142) 182424

KENT

HOLY TRINITY CONVENT
SCHOOL
11 Highgate Lane, Bromley,
Kent BR1 3JL
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Holy Trinity
Convent School, 11 Highgate
Lane, Bromley, Kent BR1
3JL. (38142) 182424

LONDON

ELTHAM COLLEGE
HMC, formerly D.C., 11-18
boys and 100 girls
Sixth Form Places for Girls
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Eltham Col-
lege, Eltham, London SE8
3JL. (38142) 182424

Other Assistants

SURREY

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SCHOOL**
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work. The school has a
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position is full-time, with
the possibility of becoming
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Please apply in writing to
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and names and addresses of
two referees. (30578) 182424

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Please apply in writing to
the Headmaster with C.V.
and names and addresses of
two referees. (30578) 182424

Other Assistants

DORSET

BRYANSTON SCHOOL
Dorchester, Dorset
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Bryanston
School, Dorchester, Dorset
DT1 1JY. (38142) 182424

KENT

HOLY TRINITY CONVENT
SCHOOL
11 Highgate Lane, Bromley,
Kent BR1 3JL
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Holy Trinity
Convent School, 11 Highgate
Lane, Bromley, Kent BR1
3JL. (38142) 182424

LONDON

ELTHAM COLLEGE
HMC, formerly D.C., 11-18
boys and 100 girls
Sixth Form Places for Girls
Required for January 1985,
an experienced and enthusias-
tic graduate to teach
Mathematics to O level and
A level. The school has
up to 100 pupils. The
salary is according to
experience. The post is
full-time, with full curricu-
lum vitae and details of 3
referees to be sent to the
Headmaster, Eltham Col-
lege, Eltham, London SE8
3JL. (38142) 182424

Other Assistants

SURREY

**ST. CATHERINE'S
SCHOOL**
Dorking, Surrey
Required for January
1985, a part-time graduate
teacher of GEOGRAPHY to
teach mainly 11 to 14 year
olds, with some OCE
work. The school has a
strong tradition of achieve-
ment in Geography. The
position is full-time, with
the possibility of becoming
permanent post in
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Please apply in writing to
the Headmaster with C.V.
and names and addresses of
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two referees. (30578) 182424

Other Assistants

INDEPENDENT
EDUCATION

GLoucester
DEAN CLOSE SCHOOL
H.M.C., 230 pupils, 13-18
Co-educational boarding and day
Boys' section in 1985 an
Assistant CLASSICIST
Applications in the form of a
letter with curriculum vitae
and names and addresses of
two referees should be sent
to the Headmaster, Dean Close
School, Cheltenham, Glos.
Further particulars may be
obtained. The school has
its own salary scale. (38142) 181624

Computer Studies

Heads of Department

BRISTOL
BRISTOL GRAMMAR
SCHOOL
Independent, Co-educational,
1,000 pupils (11-18)
Head of DEPARTMENT OF
COMPUTER STUDIES
Required for January 1985 an
experienced and enthusias-
tic graduate, preferably with a
commercial/industrial back-
ground, to take charge of
computing within the school.
Current courses include O-
level 'A' level, the Sixth
Form, and general literacy
courses. A thriving computer
club is already in existence,
and there is considerable
scope for lateral thinking
and CAL.
The school has a range of
microcomputer hardware, and
plans are afoot to extend this
to the completion of a new
computer room early in 1985.
Salary Burnham Scale 35.
Willingness to assist with
games and/or extra-curricular
activities welcomed.
Applications with c.v. and
details of 3 referees to the
Headmaster, Bristol Gram-
mar School, Bristol B8 1SR. Tel:
Bristol (01274) 736006.
(38132) 182018

Craft, Design &
Technology

Other Assistants

COLWYN BAY

PENRHOS COLLEGE
Colwyn Bay
Independent Boarding and
Day School
O.S.A., 300 girls
CRAFT, DESIGN AND
TECHNOLOGY
Dynamic teacher re-
quired to develop this de-
partment virtually from
scratch. An appointment
is required to the
department in which the
design and equipment, the
ideal candidate will be
young, interested and wil-
ling to work with the
programme, able to co-
operate actively with other
departments, willing to
teach to O level,
and will be resident.
Letter of application,
curriculum vitae and names
of two referees to the
Headmaster, Penrhos Col-
lege, Colwyn Bay, Gwynedd,

County Donegal Vocational Education Committee

DONOGH O'MALLEY REGIONAL TECHNICAL COLLEGE, LETTERKENNY PRINCIPAL

The College which is situated in Letterkenny provides a range of 3rd level education services within the region. The College offers courses in Business Studies, Computing, Art and Design, Engineering and Science.

MINIMUM QUALIFICATIONS:
(1) The degree of a recognised degree awarding authority (with first or second class honours) or an approved equivalent qualification.

(2) Not less than five years approved experience in research, industry, business, education or other relevant areas, or in a combination of two or more of these activities subsequent to obtaining the qualification specified under (1) above. It is desirable that the experience should include teaching at an appropriate level.

(3) A knowledge of Irish to satisfy the Department of Education.

SALARY SCALE:

IRE7,545 - £18,117 - £18,895

£19,253 - £19,819 - £20,385

£20,950 - £21,516 - £22,082

£22,702 - £23,311 - £23,882

*Barrier Points

In certain circumstances, an applicant may be allowed to enter on the appropriate salary scale at a point above the minimum. However, the number of increments which may be awarded for previous suitable experience is normally a maximum of five.

Official application forms and details from: VEC Administrative Offices, Pearse Road, Letterkenny, Co. Donegal. Phone 074 21100.

Closing Date: the latest date for receipt of completed official application forms is 12 noon, Friday, 19th October 1984.

SEAN O'LONGAIN, Chief Executive Officer.

(0992)

V

HEREFORD AND WORCESTER COUNTY COUNCIL EDUCATION DEPARTMENT

WORCESTERSHIRE COLLEGE OF TECHNOLOGY APPOINTMENT OF PRINCIPAL

Following the retirement of the present holder, applications are invited for the post of Principal of Worcestershire College of Agriculture.

Candidates should have substantial experience in agricultural education with proven administrative and organisational ability.

The College provides a full programme of part-time agricultural education serving the Eastern half of the County, and has a farm extending to 160 hectares.

Salary within the range 0-4 (i.e. £14,526-£16,089).

Further details and application form (s.a.s. required) returnable by 19th October, 1984 from the County Education Officer, Further Education Services, Castle Street, Worcester, WR1 3AG.

(0927)

ROYAL NATIONAL INSTITUTE FOR THE BLIND Hethersett College

Deputy Principal

Applications are invited from suitably qualified and experienced men and women for this senior post at Hethersett College. The College provides guidance and training in vocational and living skills for 50 visually handicapped school leavers of mainly average and below average intelligence. Some students possess additional handicaps.

The post is available from Easter 1985. In addition to administrative duties the successful candidate would be required to contribute to the teaching programme of the College. The present incumbent is an Occupational Therapist and candidates from fields other than teaching will be considered for this post. This post is not residential. Salary Scale: Burnham FE (Group 1).

Application forms and further details may be obtained from:

The Principal, Hethersett College, Gatton Road, Wray Common, Reigate, Surrey. Telephone: (Reigate) 45555.

Applications should reach the Principal by 31 October 1984.



PREPARATORY SCHOOLS continued

Mathematics

Heads of Department

SURREY

DANES HILL SCHOOL, Oxshott, Surrey. IAPS Co-Educational Day School (500 pupils).

Required for January 1985, a well qualified and experienced Mathematics Graduate to take charge of the Maths Department, co-ordinating and teaching within 9 - 13 age group to Common Entrance and Public School Scholarship.

Will require a high ability to coach boys' games would be helpful.

Salary commensurate with experience and qualifications. D.E.S. Superannuation. Applications together with full C.V. and names and addresses of two referees to the Headmaster, (38196) 203418

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NEWCASTLE UPON TYNE

ASCHAM HOUSE SCHOOL 30 West Avenue, Gosforth, Newcastle upon Tyne NE3 4ES

A suitably qualified and experienced teacher of French required for January 1985, if possible. The successful applicant will have had experience in preparing candidates for P.E.S. and C.E. examinations and will be expected to give a dynamic lead as head of a thriving department. A willingness to participate in extra-curricular activities is essential.

Salary based on Burnham Scale 2 with D.E.S. Superannuation.

Apply with C.V., names, addresses and telephone numbers of 2 referees and a.s.s. to the Headmaster, (38567) 203684

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GLoucestershire

Full-time Teacher, required January. Qualified/experienced for infant class of 12 pupils in Junior Independent School. Permanent post, (minimum 3 years' experience). Apply Headmaster, Croft Hall School, Fairford, 205624 (38681)

HERTFORDSHIRE

EGERTON-ROTHESAY SCHOOL, Berkhamstead, Hertfordshire. Two experienced Christian teachers required for January 1985. Full-time preferred but part-time possible. Application by letter with full C.V. to the Principal, (30455) 205624

LONDON SW7

Required for January 1985 - fully qualified and experienced teacher for 12-13 year olds. Full-time preferred but part-time possible. Apply with curriculum vitae to the Headmaster, Glen-dower Preparatory School, 87 Queen's Gate, London SW7. (38683) 205624

WORCESTERSHIRE

THE WELLS HOUSE, Worcester. A teacher of FRENCH is required for January 1985. A full C.V. and details of 2 referees to the Headmaster, (38196) 203418

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Mid-Kent College of Higher and Further Education

The following vacancies exist:

Department of Electrical and Electronic Engineering

Lecturer Grade I
to teach Electronics and associated subjects to students on City & Guilds and B/Tec courses.

Department of Mathematics, Statistics and Computing

Lecturers-Grade II (Temporary): 2 posts
required immediately, until 31 August 1985, to assist with the teaching of computing subjects, and the development of associated teaching materials, at all levels up to and including Higher National Diploma courses.

Lecturer Grade I
required for January 1985, or earlier, to assist with the teaching of computing subjects up to BTEC National Certificate/Diploma level. Ability to assist with the teaching of either mathematics or statistics, at GCE Ordinary Level, would be an advantage.

Department of Management and Social Work Studies

Lecturer Grade II
applicants should have recent public sector experience in a management position and hold an appropriate degree and/or professional qualification.

Lecturer II In Social Work
Applications are invited for professionally qualified Social Workers for appointment to the above post. Candidates must have minimum of two years post-qualification experience and should preferably hold a degree.

The post involves teaching on the two-year non-graduate CQSW course and a variety of In-Service training courses.

Salary Scales: Lecturer Grade II £7,215-£11,568
Lecturer Grade I £5,648-£9,735

Further details and application form available from the Principal, Mid-Kent College of Higher and Further Education, Horsted, Maidstone Road, Chatham, Kent ME5 9UQ. Tel: 0834 41001 Ext 240 to whom completed applications should be returned by Friday 19 October 1984.



BEDFORDSHIRE EDUCATION SERVICE

BARNFIELD COLLEGE (LUTON)

New Bedford Road
Luton, Beds.
Tel: Luton (0582) 507531

LECTURER II FOR HEARING IMPAIRED

Applications are invited from suitably qualified individuals with secondary or FE experience, to lead this new project to provide Further Education for a group of profoundly deaf 16-19 years olds. Candidates with impaired hearing are welcome to apply.

Salary: £7548-£12099 pa

Further details and application forms, returnable with two weeks of this advertisement may be obtained from the Chief Administrative Officer at the College.



COLLEGES OF FE continued

BERKSHIRE

ROYAL COUNTY OF BERKSHIRE
WINDSOR & MAINDENHEAD COLLEGE OF FE
Required for January 1985
Computing. Any additional Business Studies subjects would be an advantage.
Application forms and further particulars from the Principal, Windsor & Maidenhead College, Courtyard Road, Windsor, SL4 3AZ.
Berkshire County Council is an equal opportunities employer. (30405) 220026

BUCKINGHAMSHIRE

AYLESBURY COLLEGE
Oxford Road, Aylesbury HP21 8PD
Applications are invited from men and women for the following posts in the Department of Business & Management Studies.
LECTURER I IN BUSINESS STUDIES
To teach at least to BTEC National/GCE 'A' level standard in Economics and Economics-based subjects and also in at least TWO of the following: Agricultural Economics, Business Administration, Business and Social Services, Hotel Reception and Front Office Operations, Travel and Tourism, Retail Sales, Supervisory Studies and Industrial Management.
Applicants should be graduates or professionally qualified or have a teaching qualification with appropriate specialisms. A degree in Business Studies which includes Economics would be particularly appropriate. Teaching experience would be an advantage, but is not essential. Those who will shortly graduate will also be welcomed.
Duties to commence January 1985 or as soon as possible thereafter.
Salary: Lecturer I £5,648 - £9,735 (currently under review).

Assistance with removals and other expenses provided in approved cases.
Further particulars and above posts may be obtained from the Principal (upon receipt of a stamped addressed envelope) to whom completed forms should be returned within 14 days of the appearance of this advertisement. (35685) 220026

CUMBRIA COUNTY COUNCIL
CARLISLE TECHNICAL COLLEGE
Applications are invited for the following posts:

SENIOR LECTURER IN TROWEL TRADES
To teach Trowelwork up to and including Advanced Craft Certificate. An ability to teach plastering, fibrous plaster work and/or a knowledge of Cast Stone plenary subjects would be an advantage.

LECTURER II IN BUSINESS STUDIES
To teach Accounts of Law and related subjects and other business subjects to students taking BTEC Higher Diploma, Certificate in Business and general business courses.

LECTURER I IN PROFESSIONAL COOKERY
To teach practical and theoretical aspects of food preparation and cookery to students taking HND, BTEC, VTS courses. Applicants should have good industrial experience and be qualified to at least GCE 'A' level.

LECTURER I IN SCIENCE
To teach Physical Science (Physics or Chemistry or a combination of the two) as a main subject, Geography or Mathematics as a subsidiary subject to students taking BTEC 'I', 'II' and 'III' levels and GCE 'A' and 'O' levels.

LECTURER I IN EDUCATION FOR SPECIAL NEEDS
To contribute to a wide range of teaching provision in Special Needs across the College courses. A qualified teacher with appropriate subject qualifications and experience in the field of Special Needs is required to develop and coordinate a strategy for appropriate work/schemes.

Salary Scales: SL £11,175 - £13,185.
LII £7,548 - £12,099.
LI £5,910 - £10,512.

Candidates for the posts should possess relevant subject qualifications and have industrial (technical) or have appropriate teaching experience.

Further details may be obtained by writing to the Principal (see panel). Please send your letter with appropriate post given above.

Closing date for applications: 15th October 1984.

Carlisle Technical College, Victoria Place, Carlisle, Cumbria CA1 1JG. (30248) 220026

DERBYSHIRE
EDUCATION COMMITTEE
HIGH PEAK COLLEGE OF FURTHER EDUCATION
Buxton

DEPARTMENT OF BUSINESS STUDIES
SENIOR LECTURER IN BUSINESS STUDIES
As well as a contribution to the teaching of Business Studies, the successful applicant will be expected to make a significant contribution to the development of the Department with particular reference to the co-ordination of the teaching of Business Studies.

Application form and details (S&E please). Closing date 18th October 1984.

DERBYSHIRE COUNTY COUNCIL IS AN EQUAL OPPORTUNITY EMPLOYER. (30293) 220026

Further particulars and application form available from the Principal, Luton (0582) 507531, to whom they should be returned no later than 15th October 1984. (30293) 220026

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BOLTON METROPOLITAN COLLEGE

Applications are invited for the following permanent posts:

PRINCIPAL LECTURER: MATHEMATICS, COMPUTING AND INFORMATION TECHNOLOGY
This is an immediate vacancy for a senior member of staff to develop and co-ordinate the critical areas of Mathematics, Numeracy and Computing across the College.

LECTURER I: CREATIVE ACTIVITIES
LECTURER I: CORE SKILLS/ COMMUNICATIONS (for April, 1985)
LECTURER I: LIBERAL STUDIES/SPECIAL EDUCATIONAL NEEDS (for April, 1985)

The above posts are within the Faculty of Open Education and are concerned, in the main, with work for Y.T.S. trainees who are unemployed young people and adults. The Creative Activities post is an immediate vacancy.

LECTURER I (HALF-TIME): ENGLISH AS A SECOND LANGUAGE
This post, an immediate vacancy, is to contribute to the teaching and organisation of the Speak-Teach Unit located in the Faculty of Community Education. Applicants should be fluent in one or more of Gujarati/Urdu/Punjabi as well as English.

LECTURER I: PSYCHOLOGY/ BIOLOGICAL SCIENCES
LECTURER I: DOMESTIC SCIENCE/ NUTRITION
LECTURER I: NEEDLECRAFT

The above posts are available from April, 1985; the first in the Faculty of General Education and the other two in the Faculty of Community Education.

Applicants for all the above posts must be appropriately qualified and have relevant experience; teaching experience and a teaching qualification are highly desirable.

Further details of each post and application forms (to be returned within two weeks of the appearance of this advertisement) are obtainable from the Chief Administrative Officer, Bolton Metropolitan College, Manchester Road, Bolton - telephone 31411, Ext. 204.

Further details and application forms, returnable with two weeks of this advertisement may be obtained from the Chief Administrative Officer at the College.

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COVENTRY

HENLEY COLLEGE OF FURTHER EDUCATION

Senior Lecturer in Computing
Required as soon as possible to lead the rapidly developing computing work of the College. In addition to being well qualified in the subject, applicants should have a good record of teaching and supervision. Recent industrial experience would be a considerable advantage. Energy and enthusiasm essential.

Salary: £10,883-£12,552 (award pending)

Lecturer II in Computing
Required from 1 January 1985 to teach on a range of computer courses, including BTEC National Diploma and GCE 'A' level. The person appointed will be expected to play a major role in supervising the Section Head.

Salary £7,215-£11,568 (award pending)

THE COLLEGE has excellent facilities including an Extensive Office, a suite of 4 computing rooms, a Computer Based Learning Centre, a CNC workshop, and a control system laboratory. The Coventry Microsystems Centre is also based in the College.

For details and application form send SAE to: The principal, Henley College of Further Education, Bell Green, Coventry, Tel (0203) 811021

Closing date for applications: 18 October 1984

Further details and application forms, returnable with two weeks of this advertisement may be obtained from the Chief Administrative Officer at the College.

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Further details and application

Fellowships, Studentships and Research Awards

EVALUATION OF RECORDS OF ACHIEVEMENT PILOT SCHEMES

The Department of Education and Science intends to provide financial support over three years from April 1985 for between 5 and 10 pilot schemes for records of achievement in secondary schools. The Welsh Office aspects similarly to provide support for pilot work in Wales. A small and suitably qualified team will be needed to monitor and evaluate progress in the schemes in order of the steering committee which is to evaluate the pilot programme.

Research organisations wishing to be considered for this grant should obtain full details from Mr. W. Cooner, Room 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Colleges of Higher Education

Other Appointments

AVON COUNTY

BATH COLLEGE OF HIGHER EDUCATION

(Incorporating BATH ACADEMY OF ARTS)

Applications are invited for

SENIOR LECTURER in

COMPUTER EDUCATION

from 1st January 1985.

Further details may be

obtained from the Director,

Bath College of Higher

Education, Newton Park,

Newtown, Bath, BA2

9BN (Tel: 01225 311111).

Applications (no form)

should be returned by 15th

October 1984. Candidates

who are not now considered

need only submit a

statement for consideration.

Their applications are on

file. (35125) 340026

CENTRAL SCHOOL OF SPEECH AND DRAMA

The School seeks to make the following appointment from January 1985 or as soon as possible thereafter.

LECTURER II IN VOICE

To teach voice on a range of courses across the School but with particular reference to the B.Ed. Hons. The successful candidate will have substantial qualifications and/or experience in the teaching of voice theory, practical voice and oral skills. Recent experience in schools would be an advantage as would the ability to teach phonetics.

Application forms and further information from the Principal's Secretary, Central School of Speech and Drama, Eton Avenue, London NW3 3HY.

Application forms to be returned by 19th October, 1984. (35125) (35126)

COUNTY OF AVON

BATH COLLEGE OF HIGHER EDUCATION

(Incorporating BATH ACADEMY OF ART)

Following the merger of the above two colleges the Governors

have now re-structured the college into three Faculties and

applications are invited for the new post of:

HEAD OF THE FACULTY of HOME ECONOMICS, SCIENCE and HUMANITIES (Burnham Grade VI)

Further details may be obtained from the Director, Bath College of Higher Education, Newton Park, Newton St. Lo, Bath, Avon BA2 9BN, to whom applications (no forms) should be returned by 15th October 1984. (35125) (35126)

BEDFORDSHIRE

LUTON COLLEGE OF HIGHER EDUCATION

PAUL SQUARE, LUTON, BEDS.

Department of Liberal & Social Studies

Required for 1st January 1985

LECTURER GRADE II

in EPL and Communications

A suitably qualified person

is required to teach com-

munications across the Col-

lege, in addition to covering

the varied levels in other De-

partments, the applicant

would teach the large

amount of EPL work within

the Department itself.

Details and application

form returnable by 26th Octo-

ber 1984, available from

Details and Application

Form from Assistant Direc-

tor, Paul Square, Luton, LU2

8LZ. Tel: (0595) 34111 Ext.

740. (35125) 340026

Details and application

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LONDON

Inner London Education

Authority

WIDE ADULT

EDUCATION INSTITUTE

Walsall Adult Education

Required for January 1985

A full time Tutor to take

responsibility for the organisa-

tion of an extensive range of

adult education courses. The

applicant should have a

specialist knowledge of the

various levels in other De-

partments, the applicant

would teach the large

amount of EPL work within

the Department itself.

Details and application

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Details and application

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ber 1984, available from

Details and Application

Form from Assistant Direc-

tor, Paul

ECONOMIC DEVELOPMENT UNIT

PRINCIPAL OFFICER (Education & Training)

PO2a £12,738 - £13,725 pay award pending

This newly created post is designed to provide liaison between economic development and vocational training. A new Economic Development Unit has been created in the City and the post holder will be on secondment from the Education Department. The appointee will contribute to the formulation of policies in the field of vocational training and will liaise between the EDU and the Education Department Further Education Division. He/she will be in a vital position to gather labour market trends from which the Council can meaningfully respond with training programmes and packages.

Candidates may be graduates or equivalent probably with a background in training and/or further education. Above all this new post requires a person of drive, imagination and flexibility able to respond creatively with training initiatives.

Application forms (returnable by Friday 19th October 1984) and further particulars from:

The Chief Education Officer, Personnel Branch,
Education Offices, Margaret Street,
Birmingham B3 3BU.
Telephone: 021-235 2801 or 021-235 2587.
An Equal Opportunities Employer.

BIRMINGHAM CITY COUNCIL

ADMINISTRATION L.E.A. CONTINUED

Professional Assistant/ Assistant Education Officer

£10,539-£11,364 p.a./£11,052-£12,738 p.a.

Applications are invited from graduates with good teaching experience for this fourth-tier appointment. A candidate direct from teaching will be appointed to the Professional Assistant Post and will, after 2 years' successful service, be re-designated Assistant Education Officer. Candidates with good teaching and at least 2 years' administrative experience in an education department will be considered for appointment as Assistant Education Officer.

The above salaries are subject to a National Award from 1st July 1984.

Application forms and further details from the Secretary for Education, Room 207, Education Department, County Hall, Truro, on receipt of a stamped addressed envelope. Closing date 19th October 1984.

Cornwall

DISTRICT HEALTH EDUCATION OFFICER

Scale 18 £10,393-£12,615 (Pay Award Pending)

Applications are invited for this new post of District Health Education Officer, which offers the opportunity to be part of the existing Health Education Department. The post will be directly accountable to the District Medical Officer (post currently being advertised).

There is enthusiastic commitment to health education within the Health Authority and the District Health Education Officer will be expected to take a positive dynamic lead in developing health promotion strategies in conjunction with the District's Prevention Working Party. The successful candidate will also be responsible for the direction and management of the Health Education Unit which already has well established links with a variety of groups and organisations both within and outside the Health Authority.

The University of Essex, which is based in Colchester, offers the potential for closer links in future developments.

Applicants interested in the post should have a background in health care, education, behavioural or social sciences, be able to demonstrate previous managerial or organisational ability.

For further information or an informal discussion, please contact Mrs. J. Lavender, Chief Nursing Officer, Colchester (0206) 861267, ext. 33.

Application form and job description from the District Personnel Department, North East Essex Health Authority, District Offices, Turner Road, Colchester, Tel: 0206 861267, ext. 54.

Closing date for receipt of applications: 22nd October 1984.

Please quote reference D19 when applying.

NORTH EAST ESSEX HEALTH AUTHORITY

ADMINISTRATION - L.E.A.

continued

HAMPSHIRE COUNTY COUNCIL

DEPUTY REGISTRAR AND FINANCE AND STAFFING OFFICER

Post No. 1002 - Grade 201

Salary Scale £9,060 - £9,660

Pay award pending. To be responsible for the administration of all College financial and staffing aspects and to act as a liaison officer between the Registrar and the staff of the Registrar.

Applicants must be able to demonstrate a broad experience in financial administration and hold an appropriate qualification.

Required to commence as soon as possible and application forms available from the Registrar, Southampton Technical College, St Mary Street, Southampton SO8 4WS. Tel: 0703 53222. Ext. 301. Closing date 19th October 1984. 480000

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HOUNSLOW LONDON BOROUGH OF

PROFESSIONAL ASSISTANT

P.O. 2 £11,388 - £12,350

inc. 1000

Applications are sought from well qualified and experienced teachers or lecturers with a minimum of 5 years' experience in the field of education, who have responsibilities for most aspects of primary, secondary and special schools. The successful applicant will have a working knowledge of the development of government bodies and later experience in other divisions. The post provides initial training and useful experience for an entrant to educational administration.

Application forms and further particulars from the Director of Education, The Civic Centre, Lampton Road, Hounslow, TW3 2JH. Tel: 01-876 7728. Ext. 3168. Closing date: 19th October 1984. An Equal Opportunities Employer. (30834) 480000

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NORTHAMPTONSHIRE

PROFESSIONAL ASSISTANT

Salary £9,060 - £11,052

Applications are sought from well qualified and experienced teachers or lecturers with a minimum of 5 years' experience in the field of education, who have responsibilities for most aspects of primary, secondary and special schools. The successful applicant will have a working knowledge of the development of government bodies and later experience in other divisions. The post provides initial training and useful experience for an entrant to educational administration.

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HUNTHILL GROUP OF SCHOOLS, 100, CALDWELL ROAD, ST. MICHAEL'S, DERBY, D1 1JH.

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WELSH JOINT EDUCATION COMMITTEE CYD-BWYLGOR ADDYSG

APPOINTMENT OF EXAMINERS

Applications are invited from practising teachers, in schools and in Further and Higher Education, and from other persons with recent experience of teaching, for the following appointments:

GCE ORDINARY LEVEL

1985 ASSISTANT EXAMINERS

In Computer Studies English Language
GCE/CSE COMMON SYLLABUS

1985 ASSISTANT EXAMINERS

In Biology

1986 CHIEF EXAMINER

In English Literature (Re-advertisement - previous applicants need not re-apply).

1986 ASSISTANT EXAMINERS

In Craft Design and Technology Graphical Communication

1987 CHIEF EXAMINERS

In Craft Design - Metal, Craft and Design - Wood, (Re-advertisement - previous applicants need not re-apply).

Further particulars and application forms, to be returned by 23rd October 1984, may be obtained from G. Lloyd Jones, Secretary, Welsh Joint Education Committee, 245 Western Avenue, Cardiff CF5 2YX. A stamped addressed envelope must be enclosed and the outer envelope should be endorsed Examinations. (6313)

Examiners

INSTITUTE OF LINGUISTS EDUCATIONAL TRUST MODERATOR FOR MINOR LANGUAGES

Applications are invited for two posts of Moderators for the Institute's examinations in minority languages. The posts are for the examination of candidates in the following languages: Welsh, Gaelic, Irish, Scottish Gaelic, and Breton. The posts are for the examination of candidates in the following languages: Welsh, Gaelic, Irish, Scottish Gaelic, and Breton. The posts are for the examination of candidates in the following languages: Welsh, Gaelic, Irish, Scottish Gaelic, and Breton.

1985 CHIEF EXAMINER

In English Literature (Re-advertisement - previous applicants need not re-apply).

1986 ASSISTANT EXAMINERS

In Craft Design and Technology Graphical Communication

1987 CHIEF EXAMINERS

In Craft Design - Metal, Craft and Design - Wood, (Re-advertisement - previous applicants need not re-apply).

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1986 ASSISTANT EXAMINERS

In Craft Design and Technology Graphical Communication

LONDON REGIONAL EXAMINING BOARD

Applications are invited for the following posts:

MODERATORS (For the 1985 series of examinations)

Geography, Economics, English, Social Studies.

ADDITIONAL EXAMINER (For the 1985 series of examinations)

English.

VISITING ASSESSOR (For the 1985 series of examinations)

Art, Design and Crafts.

CHIEF EXAMINER (For the 1985 series of examinations)

Child Development.

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Miscellaneous

DORSET

INSTRUMENTAL MUSIC

Applications are invited for the full-time post of PERFORMING ARTS COORDINATOR (main instrument trumpet), based in Dorset from 8 April 1985 or earlier.

CHIEF EXAMINER (For the 1985 series of examinations)

Child Development.

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CHIEF EXAMINER (For the 1985 series of examinations)

Properties for Sale

Ealing

London Borough

SUBSTANTIAL SCHOOL PREMISES

**For further details apply:
Chief Valuer, London Borough of Ealing
Acton Town Hall, Winchester Street, Acton W3 6NE
Tel: 01-992 5566 Ext. 2264**

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

Wakefield arena: Write
vate Tutors: 3
Groves, Leeds: 1
(Jesse)

Children Features (TES)
9 Berkeley Square, Ballf
Manchester, M1 2JG

● 2019年10月1日起，中国公民持普通护照免签入境的国家和地区达55个。

A black and white photograph of a rolled-up newspaper. The front page is visible, showing the title "Educational Supplement" in large, bold letters. Below the title, the words "THE WEEK" and "THE SUN" are printed. On the right side of the front page, the text "Source of the Paper" is visible. The newspaper is rolled up and lies diagonally across the frame. The background is a simple, light-colored surface with some faint lines suggesting a corner or wall.

the 1990s, the number of people in the United States who are 65 years of age or older is projected to increase from 20 million to 35 million, and the number of people 75 years of age or older is projected to increase from 10 million to 15 million (U.S. Census Bureau, 1996). The number of people 85 years of age or older is projected to increase from 2 million to 4 million (U.S. Census Bureau, 1996). The number of people 90 years of age or older is projected to increase from 500,000 to 1 million (U.S. Census Bureau, 1996). The number of people 95 years of age or older is projected to increase from 100,000 to 200,000 (U.S. Census Bureau, 1996). The number of people 100 years of age or older is projected to increase from 10,000 to 20,000 (U.S. Census Bureau, 1996).

Name _____
Address _____

Signature _____ Date _____